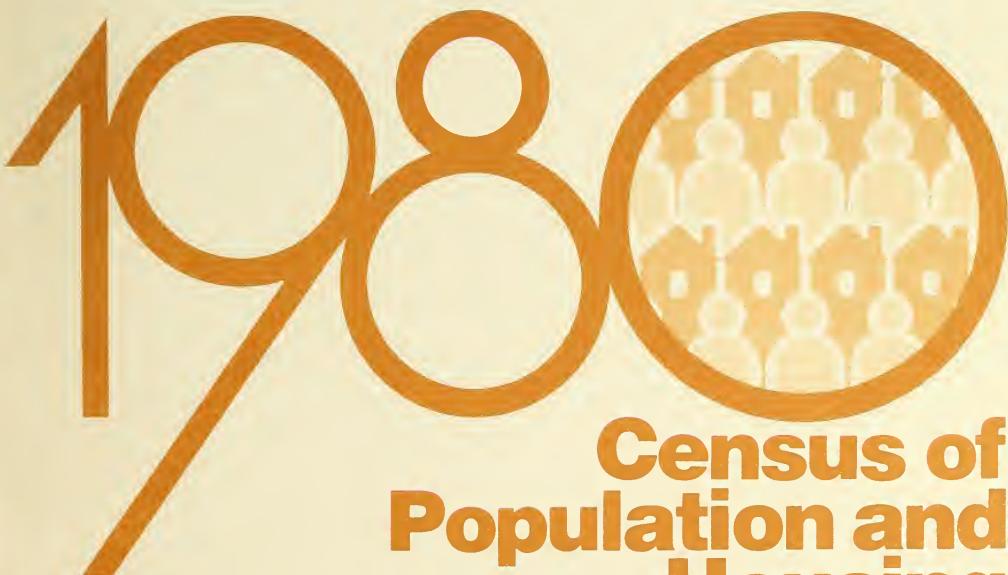


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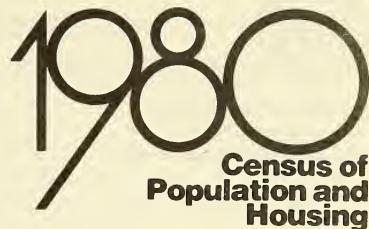
# The Coverage of Housing in the 1980 Census



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EVALUATION AND RESEARCH REPORTS

# The Coverage of Housing in the 1980 Census

PHC80-E1

Issued July 1985



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# 1980

**Census of  
Population and  
Housing**

## The Coverage of Housing in the 1980 Census

PHC80-E1

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## Summary

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The Housing Unit Coverage Studies (HUCS) consisted of two separate studies. One, the CPS-Census Match, measured the missed rate of housing units in the 1980 census. The other, the Duplicates Study, measured the duplication rate for occupied housing units that had at least one duplicated household member.

**CPS-Census Match**—The CPS-Census Match consisted of matching an independent listing of housing units (a subsample of the April, 1980 Current Population Survey) to the census records to determine the enumeration status of each housing unit on the independent list. Interviewers visited the housing units which could not be matched in order to obtain additional information to use as a matching aid. These units then were rematched to the census. Any unit on the independent list that was not enumerated in the census was called a missed unit. The independent list, compiled during the week of April 13-19, 1980, consisted of about 37,000 housing units and was a national probability sample. The census data were intended to reflect conditions as of April 1, 1980. Because the census was collected over a period of several months, it may not reflect those conditions.

**Duplicates Study**—The Duplicates Study was divided into two parts: the within-ED component and the between-ED component. The ED (census enumeration district) was the area that normally comprised the workload for one enumerator and was a compact land area containing about 400 housing units. The sample for this study was obtained by screening the sample cases for a study that measured the coverage of persons in the 1980 census, the E-Sample of the Post Enumeration Program (PEP). The E-Sample identified oc-

cupied housing units that had at least one household member who had been duplicated within the ED in which the housing was located. These units comprised the within-ED component of the Duplicates Study. The E-Sample also provided a means for detecting housing units that enumerators may have had difficulty with in determining the ED number for the ED in which the unit is located. This situation is referred to as a possible geographic coding problem. All of the units that had these geographic coding problems went through a screening process to determine if the household members associated with those units were duplicated in the other ED's in which these units could be located. The occupied units with possible geographic coding problems and at least one household member duplicated in another ED comprised the between-ED component of the Duplicates Study. Interviewers visited all of the sample units to determine if both of the addresses at which the household members had been enumerated represented the same housing unit.

**Comparability**—The data from the Housing Unit Coverage Studies are not intended to be measures of absolute rates of error. There are too many variables that were not, and perhaps cannot be, controlled to ascertain absolute levels of coverage. However, there is value in these data in that they show relative improvement or deterioration in the gross missed rate from census to census. The methodology used in the 1980 evaluation of housing unit misses was very similar to that used in 1970. Thus by holding the data collection and processing procedures approximately constant, the uncontrolled variables have the same effect in both censuses. The result, then, is two sets of

data that are expected to be roughly comparable in measuring relative change.

The estimates of occupied housing unit duplication have a number of limitations and should be used carefully. In the past there have been studies measuring housing unit duplications. However, the methods used in 1980 are substantially different and, we believe, superior to those used in prior censuses. Thus the data from the 1980 study are not comparable with these past studies. The value of this study is that it provides a starting point for understanding housing unit duplications and points to areas where additional work can be done.

**Results**—The results of the Housing Unit Coverage Studies are summarized below:

1. The coverage of housing units in the 1980 census remained at about the same level as in the 1970 census. The missed rate in 1980 for all housing units was 2.6 percent (with a standard error (s.e.) of 0.12 percent) for the nation. The rate for occupied units was 1.5 percent (s.e. = 0.08), while 12.56 percent (s.e. = 0.79) of the vacant units were missed.
2. The duplication rate for occupied housing units that had at least one household member who had been duplicated was 0.86 percent (s.e. = 0.04). The most common reason for duplicate enumerations of occupied units was district office error<sup>1</sup> (44.3 percent with a s.e. of 2.0) followed by

<sup>1</sup>A district office error is the result of a person in the district office not following procedures. An example is a clerk who is matching addresses and adding the non-matches to the address lists and does not recognize an exact match. A district office error is not limited to district office clerks; it also could result from enumerators not following instructions.

geographic coding error<sup>2</sup> (27.5 percent with a s.e. of 1.8).

3. Among regions, the South had the highest duplication rate of occupied units that had at least one household member who was duplicated. The South also had the highest estimated missed rate for occupied units, but its rate, although significantly higher than those of the Midwest and West, was not significantly different (0.05 significance level) from that of the Northeast.

<sup>2</sup>A geographic coding error is the assignment of a housing unit to the wrong geography.

4. Rural areas had higher rates than urban areas for missed occupied units, missed vacant units, and duplicated occupied units which had at least one household member who was duplicated.
5. Thus, not surprisingly, units located outside SMSA's had a higher missed rate for vacant units and a duplication rate for occupied units that had at least one household member who was duplicated than units located within SMSA's.
6. Among the types of enumeration areas (Tape Address Register, Prelis, Conventional, prelist areas had the largest rates for missed occupied units, missed vacant units, and duplicated occupied units that had at least one household member who had been duplicated.
7. The entire household was duplicated in about 88 percent of the duplicated occupied units that had at least one household member who was duplicated.
8. The rate at which occupied housing units remained misclassified as vacant was at least 0.5 percent, perhaps slightly higher than the 1970 residual rate of misclassification.

# Chapter 1.—Background and Results

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## BACKGROUND

### Introduction

The Housing Unit Coverage Studies (HUCS) were designed to provide data on housing unit coverage in 1980 for planning future censuses. The primary purpose of these studies was to provide national and regional estimates of the gross underenumeration rate<sup>1</sup> for occupied housing units and the overenumeration<sup>2</sup> rate for occupied housing units, where the overenumerated units also had overenumeration of at least one household member.

These studies provide data for (1) tracking relative change in coverage for selected characteristics from census to census, (2) planning the 1990 census, and (3) enabling users to understand in general terms the strengths and weaknesses of housing data.

These studies were not designed to provide estimates of net coverage error.<sup>3</sup> Several of the components necessary for

making this estimate are missing, including an estimate of overenumerated vacant housing units, an estimate of overenumerated occupied housing units which did not have overenumeration of persons, and an estimate of geographic coding errors.<sup>4</sup>

Data from two separate surveys compared with 1980 census information composed the HUCS. This report discusses the findings from these studies. Brief descriptions of how housing units were listed in the 1980 census and of the evaluation procedures are given first to provide a fuller understanding of the data presented and the inferences drawn. A detailed discussion of the evaluation methodology and of the limitations on the data is given in the remaining chapters of this report.

### Review of the Census

The 1980 census was conducted partly by mail and partly by enumerator canvass. Approximately 95 percent of the housing units and population were enumerated by mail-out/mail-back procedures. Only

sparsely populated areas of the country which contained five percent of the housing units and population were enumerated by canvassing. The mail census was done by addressing census questionnaires using residential address lists that had been acquired or compiled by the Bureau. Then the questionnaires were mailed and households were asked to complete and mail the questionnaires to the census offices. Census enumerators made personal visits to the housing units from which questionnaires were not received.

The mailing lists were compiled in several ways. For most cities in metropolitan areas, the Bureau obtained computer tapes of residential addresses from commercial sources and had the addresses checked and corrected by the post office. The addresses then were grouped into census enumeration districts (ED's)<sup>5</sup> and printed out as Tape Address Register (TAR) ED's.

In areas where commercial address registers could not be used, mailing lists for each ED were created by census listers and checked by the post office. Census enumeration districts that were covered in this manner are referred to as Prelist ED's. In both TAR and Prelist areas, census enumerators added a small number of previously unlisted units during the field enumeration followups.

Five percent of the housing units and population was enumerated by the conventional list/enumerate procedures whereby census enumerators canvassed their assigned ED's to list the housing units and enumerate the people. At the conclusion of the field enumeration in con-

<sup>1</sup>For the census, each housing unit is assigned specific codes based on its geographic location. These codes are controls for the census and with a serial number uniquely identify the housing unit. The assignment of these codes is subject to error and when such an error occurs it is called a "geocoding error" or a "geographic coding error." If an address is misgeocoded, it is very difficult if not impossible to locate that unit in the census. Geographic coding errors affect the estimates of under- and overenumerations. A housing unit which was enumerated in the census but misgeocoded may be considered "not enumerated" since its listing cannot be located in the census address lists. Thus geocoding errors lead to overestimates of the underenumeration rates. On the other hand, overenumerations may go undetected because the geocoding for the duplicate listing may be unpredictable. Thus the overenumeration estimates may be too low. In this particular study, no attempt was made to measure the effects of geographic coding errors in either set of estimates.

<sup>2</sup>Underenumerations minus overenumerations.

<sup>3</sup>An area that normally comprises the workload of one enumerator. The average ED size was 325 housing units in TAR areas, 550 in prelist areas, and 275 in conventional areas.

ventional areas, the address lists were checked for completeness by the post office.

As part of the 1980 census, a procedure (the Unit Status Review) was instituted for ascertaining the occupancy status of all housing units initially enumerated as vacant or deleted as nonexistent.

### P-Sample

The P-Sample portion of the HUCS was designed to measure the gross miss rate for occupied housing units. In addition this portion measured the gross miss rate for vacant units and provided data on the classification of living quarters in special places. As a by-product, a list of whole missed structures was available for use in the redesign of the American Housing Survey.

The P-Sample consisted of the approximately 37,000 units included in the April 1980 Current Population Survey (CPS) A-design. The frame for the CPS comprises a combination of 1970 census addresses, area sample listings which are updated on an annual basis, new construction that occurs during the intercensal period, and other frames to represent housing not covered by these three frames.

The 1980 census records were searched in an attempt to match the P-Sample housing units. The search of the census records consisted of determining the census enumeration districts in which the CPS units should have been counted and examining those records. The matching procedures made use of information contained on Form CPS-677, "Post Enumeration Survey,"<sup>6</sup> CPS segment listing sheets and sketch maps, and census address listings and enumerators maps. Several quality control checks were made to guard against "false" matching and improper failure to match. In addition, CPS interviewers revisited the sample units that had not been matched to see if

the addresses were correct and to see if the units could have been identified in other ways in the census. Finally, an intensive review was made of all ED's in which the unmatched units might have been counted in the census, i.e., the search was extended to the ED's that surrounded the ones in which the units were thought to exist.

### E-Sample

The E-Sample portion of the HUCS was designed to measure the overenumeration rate for occupied housing units in the census. The sample was selected from 1980 census enumerations which had overenumeration of at least one household member. In addition to person overenumeration, the units included in the between-ED portion were limited to those which had some evidence of possible geographic coding problems. This limit resulted in an underestimate of the gross multiple enumeration rate, because of the various types of duplicates excluded from the study. Those classes of overenumerations excluded are (1) occupied housing units for which no household member was overenumerated and which had no indication of geographic coding problems, and (2) vacant housing units.

The Post Enumeration Program (PEP) E-Sample contained about 110,000 households in 10,000 ED's.<sup>7</sup> A screening process was used on these 110,000 cases to identify the 6,274 cases which comprised the HUCS E-Sample. The HUCS E-Sample can be subdivided into two groups: within-ED cases and between-ED cases.

**Within-ED Cases**—As part of the PEP E-Sample evaluation, a within-ED duplicate check was performed for approximately 50,000 households. For each of these households, all questionnaires in the ED were searched to determine if any of the persons in the sample households were duplicated in the ED. The HUCS within-ED cases are those for which within-ED duplication of persons was identified during PEP processing.

**Between-ED Cases**—PEP interviewers field-geocoded the PEP E-Sample addresses. Whenever there was a discrepancy between the interviewer and census geographies, a reconciler was assigned to determine the correct ED in which the unit was located. The HUCS E-Sample includes (1) all PEP cases for which the PEP interviewer geocoded the case to an ED that was different from the census ED, even if a PEP reconciler later determined that the census ED was correct, and (2) all cases where duplicate persons were found in the PEP between-ED duplicate check (similar to the PEP within-ED duplicate check).

### Sample Design Rationale

The design for the HUCS may not be the optimum one to provide the desired estimates of housing unit coverage in the census. An alternative plan, a block relist, was initially proposed. For this alternative, a sample of census blocks would have been selected and interviewers would have listed all units in the sample blocks. The interviewers would not have had access to the census listings for a block; they would have created their listing in a blank listing book (similar to a Census Address Register, but with space to record current and census day occupancy status and household name). These listings then would have been matched against the census listings for the same blocks on a unit-by-unit basis in a two-way match to identify unmatched units in both sources. Problem match cases and geographic coding discrepancies would have been resolved by a field follow-up.

The block relist approach was rejected in favor of the HUCS design based on two considerations:

1. The estimated cost of the block relist approach was much higher than the estimated cost of the HUCS design.
2. The decision to carry out this study was made in late 1980. It was felt that the time period between Census Day (April 1, 1980) and the time of the independent block listings (approximately 1 year) would cause a serious impact on the quality of data. The time lag

<sup>6</sup>As part of the April 1980 CPS, interviewers filled out the form in addition to the CPS questionnaire. Used in the Post Enumeration Program (PEP), the form contained address information, household roster, and demographic characteristics for each household member.

<sup>7</sup>The PEP E-Sample is discussed in chapter 3.

would result in change in occupants and the housing inventory as well as recall errors. The HUCS design did not have this problem as it was based on data collected very near Census Day.

## RESULTS

Before discussing the evaluation results, a few comments are needed on the limitations of these data. First, the estimated error rates that are cited are based on sample data and are subject to sampling variability. A rate of zero or 100 percent for the sample results in an estimate of zero for its standard error. However, if the rate for the population is not zero or 100 percent, then the standard error for the sample estimate is greater than zero but cannot be estimated from this particular sample. For a discussion of sampling variability, refer to Chapter 4, Reliability of the Data. These data also are subject to nonsampling errors. The limitations of the P-Sample and E-Sample are discussed in "Limitations of the Data" in chapters 2 and 3.

Second, the estimates of the gross underenumeration rate reflect the completeness of the census address registers and not the microfilm or data tapes from which the final census counts are

generated. To the extent that these two sources differ, the underenumeration rates obtained from the P-Sample will be affected.

Third, the estimation procedures for the E-Sample used the counts of occupied housing units, excluding "closeouts,"<sup>8</sup> to be consistent with the sample design. Duplicate enumeration status for closeouts could not be determined because names usually were not recorded.

The rates shown in this report apply to total occupied housing units if one assumes that the closeouts are distributed throughout the population the same as non-closeout housing units.

Table 1 shows the census housing data for various levels of geography. Thus, the rates given in this report can be applied to those data in order to give the reader an understanding of the number of units underenumerated and overenumerated.

### Gross Underenumeration Rates for Housing Units

The total gross underenumeration rate<sup>9</sup> for housing units in 1980 is estimated to be

<sup>8</sup>A housing unit for which only number of persons in the household is known.

<sup>9</sup>The underenumeration rate unadjusted for geographic coding errors and overenumerations.

Table A. Estimated Housing Unit Gross Underenumeration Rates for the United States: 1980

Occupancy status	Underenumeration rate	Standard error of rate
United States.....	2.60	0.12
Occupied.....	1.50	0.08
Vacant.....	12.56	0.79

Source: Table 2; denominators from table 1.

Table C. Estimated Occupied Housing Unit Gross Underenumeration Rates for Urban and Rural Areas: 1980

Urban/rural status	Underenumeration rate	Standard error of rate
United States.....	1.50	0.08
Urban.....	1.32	0.09
Rural.....	1.98	0.20

Source: Table 2; denominators from table 1.

Table B. Estimated Occupied Housing Unit Gross Underenumeration Rates for Regions: 1980

Region	Underenumeration rate	Standard error of rate
United States.....	1.50	0.08
Northeast.....	1.59	0.14
Midwest.....	1.33	0.14
South.....	1.82	0.15
West.....	1.08	0.16

Source: Table 2; denominators from table 1.

Table D. Estimated Occupied Housing Unit Gross Underenumeration Rates for SMSA Status: 1980

SMSA status	Underenumeration rate	Standard error of rate
United States.....	1.50	0.08
Inside SMSA's.....	1.41	0.08
Outside SMSA's.....	1.69	0.18

Source: Table 2; denominators from table 1.

2.6 percent (table A). For each 1,000 units that were finally enumerated in the census, an estimated 26 were missed. The estimated gross underenumeration rate for occupied housing units is 1.5 percent, while the gross miss rate for vacant housing units is 12.56 percent.

### Coverage of Occupied Housing Units

The South has a higher gross underenumeration rate for occupied housing units than every other region except the Northeast (table B). The difference between the South and the Northeast is not statistically significant.

The gross miss rate for occupied housing units in urban areas is significantly lower than that for rural areas (table C).

There is no statistically significant difference between the gross miss rates for occupied housing units inside SMSA's and those outside SMSA's (table D).

In prelist areas, the gross miss rate for occupied housing units was higher than that for occupied units in either TAR or conventional areas (table E).

### Coverage of Vacant Housing Units

The West had a statistically significant lower gross underenumeration rate for va-

Table E. Estimated Occupied Housing Unit Gross Underenumeration Rates for Enumeration Areas: 1980

Enumeration area	Underenumeration rate	Standard error of rate
United States.....	1.50	0.08
TAR.....	1.33	0.09
Prelist.....	1.76	0.14
Conventional.....	0.98	0.30

Source: Table 2; denominators from table 1.

Table F. Estimated Vacant Housing Unit Gross Underenumeration Rates for Regions: 1980

Region	Underenumeration rate	Standard error of rate
United States.....	12.56	0.79
Northeast.....	13.36	1.34
Midwest.....	13.21	2.06
South.....	13.33	1.40
West.....	8.72	1.58

Source: Table 2; denominators from table 1.

cant housing units than the Northeast and South (table F). There is some evidence that the rate for the West is lower than the rate for the Midwest.

The gross miss rate for vacant housing units in rural areas is about twice that for vacant units in urban areas (table G).

The gross underenumeration rate for vacant housing units inside SMSA's is significantly less than that for units outside SMSA's (table H).

Prelist areas have a significantly larger percentage of missed vacant housing units than TAR areas (table I). The difference between prelist and conventional areas is not statistically significant.

### Misclassification of Occupied Housing Units as Vacant

In principle, taking a census is an attempt to enumerate population and housing as they exist on a given day. (In 1980, April 1.) In practice, this goal cannot be achieved. While the occupancy status for the majority of units is established as of April 1, especially in mail areas where almost 85 percent of households complete and return their questionnaires around April 1, followup enumeration of remaining units is spread out over several weeks. During that followup period, moves occurring among the population prohibit the enumeration of the population as it was distributed on April 1. (Theoretically, this problem may be more acute in conventional census areas than in mail areas.<sup>19</sup>) Partially to overcome these problems, households are enumerated during the followup wherever they are found unless they inform the enumerator that they already have been enumerated elsewhere. Also a Unit Status Review, a followup of units which initially were classified as vacant or were deleted, was conducted to determine if units were occupied units which had been misclassified.

A postcensal evaluation of the Unit

<sup>19</sup>In conventional areas enumerators canvass their assignment areas, listing and enumerating each housing unit. The enumeration phase was scheduled for a 4-week period beginning on March 31, 1980, while followup was scheduled for 2 weeks beginning on May 23, 1980. Because the initial enumeration took longer in conventional areas than in mail areas, it may be less of a reflection of the population on April 1 than the mail enumeration.

Table G. Estimated Vacant Housing Unit Gross Underenumeration Rates for Urban and Rural Areas: 1980

Urban/rural status	Underenumeration rate	Standard error of rate
United States.....	12.56	0.79
Urban.....	9.27	0.94
Rural.....	17.37	1.29

Source: Table 2; denominators from table 1.

Table I. Estimated Vacant Housing Unit Gross Underenumeration Rates for Enumeration Areas: 1980

Enumeration area	Underenumeration rate	Standard error of rate
United States.....	12.56	0.79
TAR.....	9.23	1.25
Prelist.....	15.25	1.14
Conventional.....	12.24	3.60

Source: Table 2; denominators from table 1.

Table H. Estimated Vacant Housing Unit Gross Underenumeration Rates for SMSA Status: 1980

SMSA status	Underenumeration rate	Standard error of rate
United States.....	12.56	0.79
Inside SMSA's.....	10.76	0.97
Outside SMSA's.....	15.01	1.21

Source: Table 2; denominators from table 1.

Status Review<sup>21</sup> revealed that of the 5,823,000 vacant units followed up, about 591,000 (10.1 percent) were converted to occupied (table J). However, since the Unit Status Review was conducted clerically, about 2.9 percent of the units incorrectly remained vacant and about 1.8 percent erroneously were converted to occupied. The proportion of vacant units which were actually occupied is approximately 11.2 percent.

The postcensal evaluation also estimated that nearly 1,730,000 vacant housing units were mistakenly excluded from the Unit Status Review followup. If one assumes that the followup of these units would have yielded results similar to those for the units that were followed up, then about 0.5 percent of the occupied housing units still remained classified as vacant after Unit Status Review were not reinterviewed. It is not unlikely that a reinterview would show that some of these units still are misclassified. Thus the estimated rate of 0.5 percent is an underestimate of the residual misclassification rate.

<sup>21</sup>A detailed description of this evaluation and its results will be in the 1980 Census of Population and Housing, Evaluation and Research Reports, PHC80-E2, *Evaluation of the 1980 Coverage Improvement Program*, chapter 8.

Table J. Results of Unit Status Review Followup for Vacant Units: 1980

Category	Number	Percent
Vacant units in followup.....	5 822 694	100.0
Actually occupied.....	653 973	11.2
Converted to occupied after followup.....	1 485 354	8.3
Should have been converted to occupied but weren't.....	168 619	2.9
Actually vacant.....	5 168 721	88.8
Left in census as vacant.....	5 063 219	87.0
Converted to occupied after followup.....	105 502	1.8

<sup>21</sup>Represents about 0.6 percent of occupied housing units. Denominator from table 1.

### Comparison of 1980 With 1970 Underenumeration Rates

There is no statistically significant difference at the national level between the gross underenumeration rates for 1980 and 1970 (table K). Three sets of numbers are given for 1970: CPS-Census Match before processing, CPS-Census Match after processing, and the Mail Area Study.<sup>22</sup> The data from the 1970 Mail Area Study are preferred, but exclude those areas which were conventionally enumerated in 1970 (about 40 percent of the population). In 1980 only about 5 percent of the population was conventionally enumerated.

The 1970 CPS-Census Match "before processing" data are based on the numbers of housing units that were listed in the census address registers. In most areas, the count of housing units that was made during the field enumeration was essentially unchanged by processing. If, however, any substantial changes were made, the estimates are shown as "after processing."

<sup>22</sup>The CPS-Census Match and Mail Area Study are described in the 1970 Census of Population and Housing, Evaluation and Research Program, PHC(E)-5, *The Coverage of Housing in the 1970 Census*.

Table K. Comparison of Estimated Housing Unit Underenumeration Rates for the United States: 1980 and 1970

Occupancy status	1980 census		1970 census					
			CPS-Census Match			Mail Area Study		
	Under-enumeration rate	Standard error of rate	Under-enumeration rate before processing	Standard error of rate	Under-enumeration rate after processing	Standard error of rate	Under-enumeration rate	Standard error of rate
United States.....	2.60	0.12	2.5	0.2	2.2	0.2	2.2	0.3
Occupied.....	1.50	0.08	1.7	0.2	1.4	0.2	1.3	0.1
Vacant.....	12.56	0.79	12.1	1.4	11.8	1.4	19.2	4.9

Source: Table 2 and 1970 PHC(E)-5, tables 1 and 6.

Table L. Comparison of Estimated Occupied Housing Unit Underenumeration Rates for Various Categories: 1980 and 1970

Category	1980 census		1970 census					
			CPS-Census Match			Mail Area Study		
	Under-enumeration rate	Standard error of rate	Under-enumeration rate before processing	Standard error of rate	Under-enumeration rate after processing	Standard error of rate	Under-enumeration rate	Standard error of rate
United States.....	1.50	0.08	1.7	0.2	1.4	0.2	1.3	0.1
REGION								
Northeast.....	1.59	0.14	1.8	0.4	(NA)	(NA)	1.5	0.2
Midwest.....	1.33	0.14	0.8	0.2	(NA)	(NA)	1.0	0.2
South.....	1.82	0.15	2.6	0.4	1.7	0.3	1.8	0.3
West.....	1.08	0.16	1.6	0.2	(NA)	(NA)	0.9	0.2
URBAN/RURAL STATUS								
Urban.....	1.32	0.09	1.3	0.2	(NA)	(NA)	1.3	0.1
Rural.....	1.98	0.20	3.1	0.2	2.5	(NA)	1.9	0.2
SMSA STATUS								
Inside SMSA's...	1.41	0.08	1.4	0.2	(NA)	(NA)	1.3	0.1
Outside SMSA's...	1.69	0.18	2.6	0.1	1.9	0.1	1.3	0.3
ENUMERATION AREAS								
TAR.....	1.33	0.09	0.9	0.2	(NA)	(NA)	1.3	0.1
Prelist.....	1.76	0.14	2.6	0.4	(NA)	(NA)	1.6	0.2
Conventional....	0.98	0.30	2.6	0.1	1.9	0.1	(NA)	(NA)

Source: Table 2 and PHC(E)-5, tables 1-3, 5-8, and 10. (NA) Not available.

The coverage of occupied housing units improved significantly in conventional areas and there is some evidence that it improved in rural areas (table L).

### Comparison of 1980 With 1970 Misclassified Occupied Rates

In 1970 the misclassification of occupied housing units was measured by the National Vacancy Check<sup>13</sup> and the Mail Area Study.<sup>14</sup> The National Vacancy Check was a postcensal reinterview of a

sample of nonseasonal vacant housing units enumerated in the 1970 census. The Mail Area Study measured the misclassification of vacant units by enumerator errors and procedural errors<sup>15</sup> in mail areas.

<sup>13</sup>An enumerator error is one in which an enumerator classified as vacant a housing unit occupied by the same household throughout the census-taking period.

A procedural error is one in which an enumerator classifies as vacant a housing unit that had been occupied on Census Day (April 1, 1980) but later was vacant during the census-taking period. The enumerator may have visited the unit when it was vacant.

One must recognize that opposing (and somewhat compensating) errors also occurred. Some units that were vacant on census day and remained continuously vacant throughout the census period were somehow misclassified as occupied. Some units that were vacant on census day later became occupied and were enumerated as occupied by followup enumerators.

<sup>14</sup>Described in the 1970 Census of Population and Housing, Evaluation and Research Program, PHC(E)-6, *Effect of Special Procedures to Improve Coverage in the 1970 Census*, chapter VI.

<sup>15</sup>Described in 1970 PHC(E)-5.

The misclassification errors in the 1970 census were corrected by an imputation procedure which was based on the results of the National Vacancy Check. This procedure corrected only those misclassifications that occurred among nonseasonal vacant and resulted from enumerator error. No measure can be obtained for the effect of misclassification of seasonal vacant housing units in the 1970 census. However this effect is likely to be minor.

The 1980 census procedures attempted to correct all of the misclassifications among non-UHE vacant units<sup>16</sup> that resulted from both enumerator and procedural errors.

In comparing the misclassified occupied rates for 1980 and 1970 in light of the limitations stated above, the 1980 rate may be slightly higher than the 1970 rate. However, had no procedure been instituted to alleviate the problem, the misclassification of occupied housing units as vacant would have had a substantial impact in both 1980 and 1970.

### Overenumeration Rates for Occupied Housing Units

The HUCS E-Sample study was limited to an investigation of those occupied units from the PEP E-Sample which had overenumeration of at least one household member. In addition to person overenumeration, the units included in the between-ED portion were limited to those which had some evidence of possible geographic coding problems.

At the national level, the overenumeration rate for occupied housing units in 1980 was 0.86 percent (table M). Thus for each 10,000 occupied housing units that were enumerated in the census, 86 were overenumerated. Of total occupied housing units, 0.48 percent were overenumerations within-ED and 0.38 percent were overenumerations between-ED.

<sup>16</sup>Vacant-UHE's are units occupied by persons who have usual homes elsewhere. These persons were enumerated at their usual homes; the units that they temporarily occupied were classified as vacant.

Table M. Estimated Occupied Housing Unit Overenumeration Rates for the United States: 1980

(Study limited to investigation of occupied units from PEP E-sample having overenumeration of at least one household member. In addition, units included in "Between enumeration districts" portion limited to those having evidence of possible geographic coding problems)

Overenumeration type	Over-enumeration rate	Standard error of rate
United States.....	0.86	0.04
Within ED.....	0.48	0.03
Between ED.....	0.38	0.02

Source: Table 3; denominators from table 1.

The overenumeration rate for occupied housing units in the South was higher than the rate in the other three regions (table N). This was primarily due to a higher rate for between-ED overenumerations. The Midwest and West had the lowest rates of overenumeration for total and within ED.

The overenumeration rate for occupied housing units was significantly higher in rural areas than in urban areas (table O). This difference also occurs for within-ED and between-ED overenumeration rates.

Occupied housing units located outside SMSA's were overenumerated more often than those located inside SMSA's (table P). This was true also for both within-ED and between-ED overenumerations.

Prest list areas had a higher overenumeration rate for occupied units than TAR areas; TAR areas had a higher rate than conventional areas (table Q). This pattern was true for both within-ED and between-ED multiple enumerations.

Occupied housing units in single-unit structures were overenumerated more often than occupied units in multi-unit structures (table R). There is no statistically significant difference between the overenumeration rates within-ED; however, the single-unit structure between-ED overenumeration rate is higher.

In this study only occupied units that had overenumeration of at least one household member were investigated. For approximately 88 percent of the overenumerated occupied housing units, the entire household was overenumerated (table S).

Table N. Estimated Occupied Housing Unit Overenumeration Rates for Regions: 1980

(Study limited to investigation of occupied units from PEP E-sample having overenumeration of at least one household member. In addition, units included in "Between enumeration districts" portion limited to those having evidence of possible geographic coding problems)

Region	Total		Within ED		Between ED	
	Over-enumeration rate	Standard error of rate	Over-enumeration rate	Standard error of rate	Over-enumeration rate	Standard error of rate
United States.....	0.86	0.04	0.48	0.03	0.38	0.02
Northeast.....	0.91	0.08	0.66	0.07	0.25	0.04
Midwest.....	0.60	0.06	0.35	0.04	0.25	0.04
South.....	1.14	0.07	0.54	0.05	0.60	0.05
West.....	0.66	0.07	0.34	0.05	0.32	0.05

Source: Table 3; denominators from table 1.

Table O. Estimated Occupied Housing Unit Overenumeration Rates for Urban and Rural Areas: 1980

(Study limited to investigation of occupied units from PEP E-sample having overenumeration of at least one household member. In addition, units included in "Between enumeration districts" portion limited to those having evidence of possible geographic coding problems)

Urban/rural status	Total		Within ED		Between ED	
	Over-enumeration rate	Standard error of rate	Over-enumeration rate	Standard error of rate	Over-enumeration rate	Standard error of rate
United States.....	0.86	0.04	0.48	0.03	0.38	0.02
Urban.....	0.70	0.04	0.42	0.03	0.28	0.02
Rural.....	1.36	0.09	0.67	0.06	0.69	0.06

Source: Table 3; denominators from table 1.

Table P. Estimated Occupied Housing Unit Overenumeration Rates for SMSA Status: 1980

(Study limited to investigation of occupied units from PEP E-sample having overenumeration of at least one household member. In addition, units included in "Between enumeration districts" portion limited to those having evidence of possible geographic coding problems)

SMSA status	Total		Within ED		Between ED	
	Over-enumeration rate	Standard error of rate	Over-enumeration rate	Standard error of rate	Over-enumeration rate	Standard error of rate
United States.....	0.86	0.04	0.48	0.03	0.38	0.02
Inside SMSA's.....	0.77	0.04	0.45	0.03	0.32	0.02
Outside SMSA's.....	1.14	0.08	0.57	0.06	0.57	0.06

Source: Table 3; denominators from table 1.

Table Q. Estimated Occupied Housing Unit Overenumeration Rates for Enumeration Areas: 1980

(Study limited to investigation of occupied units from PEP E-sample having overenumeration of at least one household member. In addition, units included in "Between enumeration districts" portion limited to those having evidence of possible geographic coding problems)

Enumeration area	Total		Within ED		Between ED	
	Over-enumeration rate	Standard error of rate	Over-enumeration rate	Standard error of rate	Over-enumeration rate	Standard error of rate
United States.....	0.86	0.04	0.48	0.03	0.38	0.02
TAR.....	0.69	0.04	0.40	0.03	0.29	0.03
Prest list.....	1.17	0.07	0.63	0.05	0.54	0.04
Recanvassed.....	1.22	0.10	0.63	0.07	0.59	0.07
Not recanvassed.....	1.13	0.09	0.63	0.07	0.50	0.06
Conventional.....	0.11	0.05	0.09	0.04	0.02	0.01

Source: Table 3; denominators from table 1.

Table R. Estimated Occupied Housing Unit Overenumeration Rates for Size of Structure: 1980

(Study limited to investigation of occupied units from PEP E-sample having overenumeration of at least one household member. In addition, units included in "Between enumeration districts" portion limited to those having evidence of possible geographic coding problems)

Size of structure	Total		Within ED		Between ED	
	Over- enumeration rate	Standard error of rate	Over- enumeration rate	Standard error of rate	Over- enumeration rate	Standard error of rate
United States.....	0.86	0.04	0.48	0.03	0.38	0.02
Single-unit structures.....	0.90	0.04	0.46	0.03	0.44	0.03
Multi-unit structures.....	0.67	0.06	0.53	0.06	0.14	0.03

Source: Table 3; denominators from table 1.

Table S. Estimated Proportion of Occupied Housing Unit Overenumerations for Portion of Household Duplicated: 1980

(Estimated number of households duplicated: Total, 680 987; Within ED, 380 055; Between ED, 300 932. Study limited to investigation of occupied units from PEP E-sample having overenumeration of at least one household member. In addition, units included in "Between enumeration districts" portion limited to those having evidence of possible geographic coding problems)

Portion of household duplicated	Total		Within ED		Between ED	
	Proportion	Standard error of proportion	Proportion	Standard error of proportion	Proportion	Standard error of proportion
			Proportion	Standard error of proportion	Proportion	Standard error of proportion
United States.....	100.0	0.0	100.0	0.0	100.0	0.0
Entire household duplicated.....	87.6	1.4	87.3	1.8	87.8	2.0
Portion of household duplicated.....	12.4	1.4	12.7	1.8	12.2	2.0

... Not applicable.

Table T. Comparison of Estimated Proportion of Occupied Housing Unit Overenumerations for Addresses That Agree and Differ: 1980

(Estimated number of households duplicated: Total, 680 987; Within ED, 380 055; Between ED, 300 932. Study limited to investigation of occupied units from PEP E-sample having overenumeration of at least one household member. In addition, units included in "Between enumeration districts" portion limited to those having evidence of possible geographic coding problems)

Address agree/differ	Total		Within ED		Between ED	
	Proportion	Standard error of proportion	Proportion	Standard error of proportion	Proportion	Standard error of proportion
			Proportion	Standard error of proportion	Proportion	Standard error of proportion
United States.....	100.0	0.0	100.0	0.0	100.0	0.0
Addresses agree.....	49.0	2.1	37.5	2.7	63.6	3.0
Addresses differ.....	51.0	2.1	62.5	2.7	36.4	3.0
One address incomplete.....	72.4	2.6	75.2	3.0	66.4	4.8
Addresses different.....	27.6	2.6	24.8	3.0	33.6	4.8

Table U. Estimated Proportion of Occupied Housing Unit Overenumerations for Types of Housing Units Involved in Duplication: 1980

(Estimated number of households duplicated: Total, 680 987; Within ED, 380 055; Between ED, 300 932. Study limited to investigation of occupied units from PEP E-sample having overenumeration of at least one household member. In addition, units included in "Between enumeration districts" portion limited to those having evidence of possible geographic coding problems)

Types of housing units involved in duplication	Total		Within ED		Between ED	
	Proportion	Standard error of proportion	Proportion	Standard error of proportion	Proportion	Standard error of proportion
			Proportion	Standard error of proportion	Proportion	Standard error of proportion
United States.....	100.0	0.0	100.0	0.0	100.0	0.0
Only one occupied unit involved.....	85.9	1.4	79.7	2.2	93.8	1.5
One occupied and one vacant unit involved.....	10.1	1.2	15.0	2.0	3.8	1.2
Two occupied units involved.....	4.0	0.8	5.3	1.2	2.4	0.9

About half of the addresses of the HUCS sample units were exactly the same as that of the corresponding duplicate units (table T). However, only about 38 percent of the within-ED overenumerations had exactly the same addresses while 64 percent of the between-ED overenumerations did. About 72 percent of the sample addresses that differed from the duplicate address did so because at least one of the addresses was incomplete.

About 86 percent of the overenumerations of occupied housing units involved only one unit enumerated more than once. An occupied housing unit enumerated twice in lieu of the enumeration of one occupied unit and one vacant one accounted for about 10 percent of the overenumerated occupied units. The enumeration of an occupied unit twice while another occupied unit was missed occurred in about four percent of the overenumerations of occupied units (table U).

### Causes of Overenumeration of Occupied Units

As part of the HUCS E-Sample processing, Census Bureau personnel from Washington reviewed each case that was coded "Duplicate" in an effort to determine why duplication occurs. Using the information available in the followup materials, address registers, and census maps, the reviewers decided the reason for the duplication for each case. This reason is the opinion of a particular reviewer based on his/her knowledge of and experience with the census procedures and thus may be subject to dispute. Nevertheless, these data do provide a reasonable starting place for the study of duplications.

In addition to recording reason for duplicate for each case coded "Duplicate," the sources of the address listing for both the sample address and the duplicate address were also noted. This means that the actual color of pencil (or preprint) used to enter the listing was coded. This color represents the procedure that added the address to the address register. Experience has shown that these data are not always reliable but are the only guide to address source available in the address

registers. The problems with using the col-  
ors result from the fact that all district of-  
fice clerks may not have had the specified  
colored pencil available or were not con-  
scientious in ensuring they had the correct  
pencil when making address register en-  
tries. Also, if an address register were lost,  
usually the replacement copy was hand-  
written. In one operation, office separa-  
tions, clerks transferred address listings  
among ED's in red pencil. The original ad-  
dress that was transferred may have been  
preprinted or in a color other than red. In  
recording color codes, there was no way to  
determine what the "true" source was;  
the sources were determined *prima facie*.

The reasons-for-duplications categories  
are:

**Geographic Coding Error**—The geocoding  
for either the sample unit or the duplicate  
unit was erroneous. Examples of such an  
error are the listing of a unit in the wrong  
ED by a prelist or conventional enumerator  
or the transfer of a unit to the wrong  
geography by the precanvass operation.

**District Office Error**—A mistake was made  
by district office personnel in following  
their instructions. This category can in-  
clude geocoding errors that could not be  
identified. An example of a district office  
error is a clerk failing to recognize an exact  
address match and consequently adding  
a unit to the address register that was  
already listed. These errors include enum-  
erator errors as well as clerical errors.

**Movers**—The household moved during the  
census period and was enumerated at  
both addresses.

**Apartment Mixups**—The household had  
been enumerated at the wrong address  
and again at the right address. The  
duplicated household probably received,  
completed, and returned the questionnaire  
for another apartment without correcting  
the address. The correct questionnaire for  
their unit probably was not returned  
resulting in the re-enumeration of the  
household during followup. Also included  
in this category are units which have two  
different apartment designations (e.g.  
Apt. 101 and 1st Floor Front) and both ad-  
dresses were listed and enumerated.

**Unit Has More Than One Address**—The  
unit residents used two different ad-  
dresses to identify the unit and were  
enumerated at both addresses. The ad-  
dress type for these addresses could be  
the same (e.g., both are house number/  
street name). An example is a housing unit  
located on a corner lot that has two ad-  
dresses assigned to it by the post office.  
Or the address type for the two addresses  
could be different (e.g., one a lockbox and  
the other a house number/street name;  
one a rural route and box number and the  
other a house number/street name). A  
common reason for this occurrence is that  
the post office had recently changed the  
address system in an area and the  
residents use both the old and new  
systems.

**Household Uses More Than One Apartment  
or Home**—The household occupied  
more than one apartment or home and  
was enumerated at both. In multi-unit  
structures, one household may occupy  
more than one apartment using them as  
a single unit. A household may own and  
occupy more than one housing unit,  
dividing their time equally among/between  
these units.

**Incomplete or Incorrect Address Listing**—  
Either the sample unit and/or the duplicate  
had an incomplete or incorrect address  
listed in the address register which did not  
uniquely identify the units. An incomplete  
address had part of the address missing;  
e.g., a direction, street type, or box  
number. An incorrect address usually was

a nonexistent address which was never  
deleted or an address changed by the post  
office in 1979-1980. In the address pair,  
usually one address was better than the  
other for identifying the unit(s).

**Other, Not Specified**—This category in-  
cludes cases for which a reason for  
duplication could not be determined.

At the national level, the most frequent  
(44.3 percent) reason for overenumeration  
of occupied housing units was district  
office errors (table V).

District office errors causing overenu-  
meration of occupied housing units occur-  
red predominantly in TAR and prelist areas  
(table W).

Table V. Estimated Frequency of Reason  
for Occupied Housing Unit  
Overenumeration: 1980

(Study limited to investigation of occupied  
units from PEP E-sample having overenumeration  
of at least one household member. In addition,  
units included in "Between enumeration dis-  
tricts" portion limited to those having evi-  
dence of possible geographic coding problems)

Reason for overenumeration	Frequency	Standard error of percent
Overenumeration.....	680 987	...
Percent.....	100.0	0.0
District office error.....	44.3	2.0
Geographic coding error.....	27.5	1.8
Unit uses more than one address.....	7.3	1.1
Apartment mixups.....	7.2	1.1
Incomplete or incorrect address listed in address list.....	6.6	1.0
Movers.....	2.2	0.6
Household uses more than one apartment or home.....	2.1	0.6
Other, not specified.....	2.8	0.7

Source: Table 4

Table W. Estimated Occupied Housing Unit Overenumeration Rates Caused by District  
Office Errors, for Enumeration Areas: 1980

(Study limited to investigation of occupied units from PEP E-sample having overenumeration of at  
least one household member. In addition, units included in "Between enumeration districts" portion  
limited to those having evidence of possible geographic coding problems)

Enumeration area	District office errors					
	Total		Within ED		Between ED	
	Over- enumer- ation rate	Standard error of rate	Over- enumer- ation rate	Standard error of rate	Over- enumer- ation rate	Standard error of rate
United States.....	0.38	0.02	0.18	0.02	0.20	0.02
TAR.....	0.43	0.03	0.22	0.02	0.21	0.02
Prelist.....	0.35	0.04	0.14	0.02	0.21	0.03
Recanvassed.....	0.37	0.05	0.16	0.04	0.21	0.04
Not Recanvassed.....	0.33	0.05	0.13	0.03	0.20	0.04
Conventional.....	0.004	0.01	0.004	0.01	0.00	0.00

Geographic coding errors accounted for an estimated 27.5 percent of the overenumerations (table V); the majority of these errors occurred in prelist areas (table X).

For approximately half of the duplication that resulted from geographic coding errors, both addresses were preprinted (table Y). This situation occurred most frequently (93 percent) in prelist areas (table Z) and was caused by overlisting in the prelist operation. In prelist areas, it is estimated that there were no within-ED duplications resulting from geographic coding errors for which both addresses were adds.

Housing units using more than one address accounted for an estimated seven percent of the overenumerations of occupied units (table V). Approximately half of these overenumerated occupied sample units had the same address type as the duplicate units (table AA).

Approximately seven percent of the overenumerated occupied units resulted from the address lists containing the incorrect or incomplete listing for the address (table V). Of the units that were overenumerated for this reason, almost two-thirds (63 percent) had incomplete address listings (table BB).

Incomplete addresses caused duplication of occupied housing units in prelist areas to a greater extent than in TAR or conventional areas (table CC).

### Comparison of Overenumeration Rates Among Studies

In past censuses studies were conducted to measure housing unit overenumerations. However, the methods used in the 1980 study are substantially different and, we believe, superior to those used in prior censuses. Thus, the data from the 1980 study are not comparable with these past studies.

The HUCS were not the only measurement of housing unit overenumeration in the 1980 census. The Housing Unit Enumeration Duplication Study (HUEDS)<sup>17</sup>

Table X. Estimated Occupied Housing Unit Overenumeration Rates Caused by Geographic Coding Errors, for Enumeration Areas: 1980

(Study limited to investigation of occupied units from PEP E-sample having overenumeration of at least one household member. In addition, units included in "Between enumeration districts" portion limited to those having evidence of possible geographic coding problems)

Enumeration area	Geographic coding errors								
	Total		Within ED			Between ED			
	Proportion	Over-enum-eration rate	Stand ard error of rate	Proportion	Over-enum-eration rate	Stand ard error of rate	Proportion	Over-enum-eration rate	Stand ard error of rate
United States.....	100.0	0.24	0.02	100.0	0.11	0.01	100.0	0.13	0.01
TAR.....	24.3	0.10	0.02	16.7	0.03	0.01	30.9	0.07	0.01
Prelist.....	74.3	0.43	0.04	80.6	0.22	0.03	68.9	0.21	0.03
Recanvassed.....	42.5	0.40	0.06	30.4	0.14	0.03	54.7	0.26	0.04
Not recanvassed.....	57.5	0.46	0.06	69.6	0.28	0.04	45.3	0.18	0.03
Conventional.....	1.4	0.08	0.05	2.7	0.07	0.05	0.2	0.01	0.01

Source: Table 7

Table Y. Estimated Frequency of Occupied Housing Unit Overenumerations Caused by Geographic Coding Errors, for Source of Addresses: 1980

(Estimated number of households duplicated: Total, 187 254; Within ED, 86 730; Between ED, 100 524. Study limited to investigation of occupied units from PEP E-sample having overenumeration of at least one household member. In addition, units included in "Between enumeration districts" portion limited to those having evidence of possible geographic coding problems)

Source of addresses	Geographic coding errors					
	Total		Within ED		Between ED	
	Percent over-enumerated	Standard error of percent	Percent over-enumerated	Standard error of percent	Percent over-enumerated	Standard error of percent
United States.....	100.0	0.0	100.0	0.0	100.0	0.0
Both addresses preprinted.....	50.4	3.9	56.6	5.7	45.1	5.3
One address preprinted.....	35.2	3.7	37.8	5.6	32.9	5.0
One address an add.....	14.4	2.8	5.6	2.6	22.0	4.4
Neither address preprinted..						

Table Z. Estimated Frequency of Occupied Housing Unit Overenumerations Caused by Geographic Coding Error in Enumeration Areas, for Source of Addresses: 1980

(Study limited to investigation of occupied units from PEP E-sample having overenumeration of at least one household member. In addition, units included in "Between enumeration districts" portion limited to those having evidence of possible geographic coding problems)

Source of addresses	Geographic coding errors					
	Total		TAR		Prelist	
	Total units	Percent over-enumerated	Stand ard error of percent	Total units	Percent over-enumerated	Stand ard error of percent
United States..	187 254	100.0	0.00	24.34	3.36	74.32
Both addresses preprinted.....	94 450	100.0	0.00	7.39	2.89	92.61
One address preprinted, one address an add..	65 865	100.00	0.00	28.02	5.94	71.98
Neither address preprinted.....	26 939	100.00	0.00	74.75	8.98	15.89

... Not applicable.

<sup>17</sup>Results and methodology are documented in the 1980 Census Preliminary Evaluation Results Memorandum Series, Numbers 44 and 45.

Table AA. Estimated Frequency of Occupied Housing Unit Overenumerations Caused by Units Having More Than One Address, for Type of Address for Sample Unit: 1980

(Study limited to investigation of occupied units from PEP E-sample having overenumeration of at least one household member. In addition, units included in "Between enumeration districts" portion limited to those having evidence of possible geographic coding problems)

Type of address for sample unit	Unit has more than one address	
	Duplicate address type same as sample address type	Standard error of rate
Number	Number	Standard error of rate
United States	49 830	49.3
House number/street name	25 405	70.7
Rural route and box	11 321	41.1
Rural route only	4 068	0.0
Post office box	9 036	21.7
		14.7

was designed to estimate the number of certain types of overenumerated housing units using the available materials (the questionnaires and the address lists) without doing additional field reconciliation. To meet these criteria, the HUEDS was restricted to studying the class of duplicate housing units where the addresses were essentially the same and where the duplicated housing units were located in the same ED or in the ED's that were geographically close (i.e., separated by not more than one intervening ED). In areas where addresses were not unique (e.g., Rural Route or General Delivery), there was an additional constraint that household names had to be essentially the same. Thus this study included occupied units and vacant units to the extent that they should have had unique addresses and/or a household name (usually the owner's). The following categories of overenumerations of housing units were excluded from the HUEDS:

1. Vacant housing units having non-unique addresses and lacking a household name.
2. Housing units having more than one apartment designation (e.g., Apt. 101 and 1st floor front).
3. Housing units having more than one street address (a corner house shown on different streets).

Table BB. Estimated Frequency of Occupied Housing Unit Overenumeration Caused by Incomplete or Incorrect Address Listings, for Type of Address for Sample Unit: 1980

(Study limited to investigation of occupied units from PEP E-sample having overenumeration of at least one household member. In addition, units included in "Between enumeration districts" portion limited to those having evidence of possible geographic coding problems)

Type of address for sample unit	Incomplete or incorrect address listing				
	Number	Percent of incomplete addresses	Standard error of percent	Percent of incorrect addresses	Standard error of percent
United States	45 234	62.6	7.7	37.4	7.7
House number/street name	18 122	45.1	12.5	54.9	12.5
Rural route and box	11 186	55.8	15.9	44.2	15.9
Rural route only	8 943	83.4	13.3	16.6	13.3
Post office box	2 046	73.3	33.2	26.7	33.2
Other	4 937	100.0	0.0	0.0	0.0

Table CC. Estimated Occupied Housing Unit Overenumeration Rates Caused by Incomplete or Incorrect Address Listings, for Enumeration Areas: 1980

(Study limited to investigation of occupied units from PEP E-sample having overenumeration of at least one household member. In addition, units included in "Between enumeration districts" portion limited to those having evidence of possible geographic coding problems)

Enumeration area	Incomplete or incorrect address listing				
	Total		Incomplete address		Incorrect address
	Over-enumeration rate	Standard error of rate	Over-enumeration rate	Standard error of rate	Over-enumeration rate
United States	0.06	0.01	0.04	0.01	0.02
TAR	0.02	0.01	0.003	0.003	0.02
Prelist	0.11	0.02	0.08	0.02	0.03
Recanvassed	0.10	0.03	0.07	0.02	0.03
Not recanvassed	0.12	0.03	0.09	0.02	0.03
Conventional	0.01	0.02	0.01	0.02	0.00

4. Those occurring in ED's that are not geographically close.

In addition, overenumeration of population which occurred where there was no overenumeration of housing units was excluded from HUEDS (e.g., a college student enumerated both at school and on the family questionnaire).

A probability sample of 20 ED clusters in each of the four census regions was selected, each consisting of a central (target) ED and all ED's contiguous with that ED.

Two different methods were selected from among several considered for estimating the overenumeration rate from this study. One method, the target estimator, was based only on detected overenumerations which involved a target ED. The other method, the cluster estimator, was based on all detected overenumerations in the entire sample. For the target estimator, all overenumerations were within a target ED or between a target and an adjacent ED. The cluster

estimator included all overenumerations that were used for the target estimator plus overenumerations within ED's adjacent to a target ED and between ED's adjacent to a target ED. The target estimator was design-based while the cluster estimator was model-based.

Table DD shows that the results from the HUCS are consistent with those from the HUEDS. However, these results are not comparable. Although housing unit overenumerations were the focus for both of these studies, neither study investigated the entire universe of duplications, nor did these two studies look at the same universe. These two studies both included some of the same types of overenumerations, but it is impossible to provide the estimates for components that would permit an analysis of comparability.

One of the goals of the PEP was to measure components of duplication of persons in the 1980 census, while the HUCS measured only a portion of those components. Therefore, the HUCS and the PEP are not directly comparable.

Table DD. Comparison of Estimated Overenumeration Rates of Housing Units in HUCS and HUEDS

Region	HUCS <sup>1</sup>	HUEDS <sup>2</sup>				
		Target estimator		Cluster estimator		
		Over-enumeration rate	Standard error of rate	Over-enumeration rate	Standard error of rate	
United States.....	0.86	0.04	0.76	0.11	0.88	0.09
Northeast.....	0.92	0.08	0.46	0.19	0.68	0.17
Midwest.....	0.61	0.06	0.41	0.17	0.77	0.16
South.....	1.14	0.07	1.17	0.23	1.14	0.16
West.....	0.66	0.07	0.77	0.25	0.80	0.21

<sup>1</sup>HUCS estimates are for United States. Study limited to investigation of occupied units from PEP E-sample having overenumeration of at least one household member. In addition, units included in "Between enumeration districts" portion limited to those having evidence of possible geographic coding problems.

<sup>2</sup>HUEDS estimates are for mail-enumeration areas only. Study limited to housing units for which duplicated addresses were essentially the same and geographically close.

Table EE. Comparison of Estimated Overenumeration Rates of Persons in HUCS and PEP

(In 1980 census, 220 807 382 persons lived in housing units. Study limited to investigation of occupied units from PEP E-sample having overenumeration of at least one household member. In addition, units included in "Between enumeration districts" portion limited to those having evidence of possible geographic coding problems.

Overenumeration type	HUCS		PEP	
	Overenumeration rate	Standard error of rate	Overenumeration rate	Standard error of rate
United States.....	0.88	0.04	1.15	0.04
Within ED.....	0.48	0.03	0.71	0.03
Between ED.....	0.40	0.03	0.43	0.03

Table FF. Census Living Quarters by CPS Living Quarters Classification

(Data are unweighted)

Census living quarters classification	CPS living quarters classification	
	Housing unit	Group quarters
Housing unit.....	34 563	56
Group quarters.....	43	399

The PEP E-Sample measured duplicated persons including noninstitutional group quarters population, both within and between ED's, whether or not a duplication of housing units was involved. The HUCS measurement is an estimate of duplicated persons in housing units which had been duplicated when at least one household member was duplicated. The HUCS esti-

mates exclude persons who were duplicated when the housing unit they occupied was not. Also, because the HUCS was a housing unit study, it did not include estimates of duplications of persons residing in noninstitutional group quarters. Table EE presents the results from these two studies.

### Classification of Living Quarters

The P-Sample was used to investigate cursorily the existence of problems in classifying living quarters as housing units or group quarters. Although the HUCS P-Sample was a study of housing units, the CPS A-Design contained group quarters which also were processed as a part of the HUCS. There was some concern expressed about how well group quarters were distinguished from housing units. Because the P-Sample was not designed to investigate thoroughly this issue, its results can provide only some limited information.

The index of inconsistency for the data shown in table FF is 11.2 percent; the 95-percent confidence interval is from 9.1 to 13.7 percent. This index level indicates a low amount of inconsistency in the classification of living quarters between the CPS and the census. Thus, distinguishing housing units from group quarters is not a major problem in the census, assuming that CPS interviewers and census enumerators do not consistently make the same misclassification.



## Chapter 2.—The P-Sample, Methodology and Limitations

### INTRODUCTION

The Current Population Survey (CPS) is an on-going nationwide survey conducted monthly by the Bureau of the Census for the purpose of providing social and economic data. The April 1980 CPS A-design sample of units was used as the basis for a record check to measure undercoverage of housing units in the 1980 census.

Briefly, in this study each April 1980 CPS A-sample housing unit was geocoded to a 1980 census ED and was searched for in the appropriate address register(s). Units which could not be matched were subsequently visited for field reconciliation to obtain additional information which might facilitate locating the unit in the census. After a review of the field work, each previously nonmatched unit again was searched for the census and ultimately classified as matched, possibly matched, possibly not matched, not matched, or noninterview.<sup>1</sup>

The use of the April CPS A-sample as a record check source had particular advantages. First, the CPS A-sample provided a basis to produce estimates of census underenumeration rates at the national and regional levels.

Second, because of the proximity of the April interview period (April 13-19) to Census Day (April 1), the April sample provided a highly reliable source to which the census could be compared. Although the April CPS interview period was about two weeks after Census Day, the census data are accumulated over a period of several months and do not necessarily reflect con-

ditions on April 1, 1980. Any differences between the census and the CPS were resolved through field reconciliation; however, the proximity of reference dates for CPS and census records minimized the number of cases requiring reconciliation.

Third, the April 1980 CPS sample was used in the Post Enumeration Program (PEP) which measured the coverage of persons in the 1980 census. The processing of the HUCS P-Sample made much use of information already obtained for each housing unit during the PEP processing, saving time and money.

Some limitations were inherent in the use of CPS records for evaluating census coverage. The CPS itself suffers from some amount of undercoverage, and correlated omissions could exist between the CPS and the census. Moreover, there are explicit population coverage differences between the two: the CPS is restricted to the civilian noninstitutional population while the census, of course, is not. Nevertheless, it was felt that the CPS could be used to provide useful estimates of census coverage error.

### METHODOLOGY

#### Background

The CPS sample design<sup>2</sup>, a multistage stratified sample of the U.S. population, contained two independent national samples called the A-design and the C-design. The Housing Unit Coverage Studies (HUCS) used the housing units selected in the A-design. The CPS A-design sample was selected in stages. The first stage involved defining the United States in terms of counties or groups of

contiguous counties (in some New England States parts of counties were used) called primary sampling units (PSU's). These PSU's then were assembled, based on homogeneous characteristics such as geographic region, population density, percent nonwhite, etc., into 376 strata. One PSU was selected for the sample from each stratum.

At the second stage, a sample of addresses within each sample PSU was selected in such a manner that each unit had the same overall probability of selection (except for a small proportion of sample units with special weights). Thus, national estimates can be obtained by weighting the sample totals by the reciprocal of the overall probability of selection. Eventually, the selection of sample units from the sample PSU's was accomplished as follows:

1. A sample of 1970 census ED's within the PSU was selected and the listings in those ED's reviewed. If the listings in an ED met certain address requirements, the ED was designated as a list ED. The list ED was divided into groups of addresses called address segments. A sample of the address segments then was selected and the units in the selected segments were designated for interview. An average segment contained about four neighboring units.

If the listings in an ED did not meet the requirements, then the ED was designated as an Area ED. The Area ED was divided into small land areas called area segments. A sample of area segments was selected, and a complete and independent listing of the units in each segment was compiled. A sample of units to be interviewed then was selected from these listings.

<sup>1</sup>A noninterview for the matching attempt usually resulted from "poor" quality information in either the CPS materials and/or the census listings for which it was not possible to determine if the CPS unit had been enumerated.

<sup>2</sup>For a more detailed description of the Current Population Survey, see Bureau of the Census Technical Paper 40, *The Current Population Survey: Design and Methodology*.

2. To allow for the sampling of new construction in list ED's, building permits (in permit-issuing places) issued since January 1970 were sampled. Addresses selected in this manner were called permit segments.
3. The Cen-Sup (Census supplemental) segments represent units in list ED's that were missed or inadequately described in the address register (and thus dropped from the universe).

CPS (conducted in mid-April) did not adequately indicate if the unit should have been enumerated in the census (April 1). The effect on the gross miss rate of omitting these units from the study is unknown, but is expected to be small.

4. Vacant tent or trailer sites. Such sites are not housing units.
5. Living quarters which were classified as group quarters. This study was limited to housing units.

In April 1980 approximately 37,000 housing units were selected to be interviewed in the A-design. However, for a variety of reasons, CPS interviews were not obtained for a number of units in April 1980. In the CPS, these noninterviews were grouped into the following categories:

1. Type A noninterviews. Units occupied by persons eligible for interview but for which no interview was conducted due to refusals, inability to find respondents at home after repeated visits, etc.
2. Type B noninterviews. Units which were found to be vacant at the time of the visit or which were occupied solely by persons ineligible for CPS interview; e.g., military personnel.
3. Type C noninterview. Units that were ineligible for the sample, such as demolished units permanently converted to nonresidential use.

Several types of CPS units were considered out-of-scope for the HUCS P-Sample. These included:

1. Units which were classified by CPS as "under construction." It is possible, however, that a few of these could have been housing units on Census Day, although almost certainly they would have been vacant.
2. Units which were classified by CPS as "unfit." Unfit units were not enumerated in the census.
3. Units in transient hotels, motels, etc. These units were to have been enumerated in the census if they were occupied on Census Day by a person with no usual home elsewhere. Due to the transient nature of the persons in these places, the listing of a unit by

viewers were provided with follow-up forms and copies of the segment folders with the cases requiring follow-up indicated. The segment folders contained the CPS listing sheets and a segment map when appropriate. The interviewers were to obtain the name of the household that lived at the unit on April 1, 1980, and to obtain any alternate address that the unit might use. In area segments, the interviewers also obtained the household name for five units on both sides of the sample unit being followed up.

For the follow-up units in a number of segments, specific information to be used in matching was requested to clarify the location of these units or to explain information in the census address listings.

After follow-up, these units were rematched using the results of follow-up as an additional aid. Because of the missing or inadequate information in the census address listings and/or follow-up results, a definite determination of match status (unit enumerated; unit not enumerated) could not be made for some cases. To allow for the likelihood of indefinite determinations, the sample units were divided into eight groups:

1. CPS sample units whose addresses were matched. These cases were coded M.
2. CPS sample units whose addresses were matched, but a specific, unique listing could not be determined. These cases were coded PM1.
3. CPS sample units for which the preponderance of evidence indicated that the addresses probably were matched. These cases were coded PM2.
4. CPS sample units for which the preponderance of evidence indicated that the addresses probably were not matched. These cases were coded PNM.
5. CPS sample units whose addresses were not matched. These cases were coded NM.
6. CPS sample units for which a determination of match could not be established due to inadequacies in census information. These cases were coded U1.

## Evaluation Operations

The April 1980 CPS A-design units which were interviewed in CPS or which were Type A or Type B noninterviews made up the P-sample portion of HUCS and were used to estimate the underenumeration rate for census units. Type C noninterviews were excluded from the evaluation.

As part of the PEP processing, each housing unit was coded to at least one 1980 census ED, and the CPS addresses for occupied housing units were searched for in the appropriate census address registers. After the address matching phase, each person in a CPS household was searched for on the census questionnaire.

Using the geocoding and matching results from the PEP, the HUCS attempted to match all CPS addresses, including those for vacant units as well as occupied units, to the census address listings. Upon completion of the address search, the April CPS A-design addresses were divided into three groups:

1. CPS sample units whose addresses were matched.
2. CPS sample units whose addresses were possibly matched.
3. CPS sample units whose addresses could not be found in the listings.

The addresses for CPS units which were "not matched" or "possibly matched" were sent to the field for reconciliation. The reconciliation was conducted by CPS interviewers in October and November 1981, in conjunction with their usual assignments during those months, and was done via personal visits. To conduct the follow-up, the inter-

7. CPS sample units for which a determination of match could not be established due to inadequacies in the CPS information. These cases were coded U2.
8. CPS sample units for which a determination of match could not be established due to inadequacies in either the census and/or CPS information.<sup>3</sup> These cases were coded U.

An extended search was conducted for occupied CPS sample units whose addresses could not be "matched" or "probably matched." This search was conducted in ED's which were contiguous to the ED in which the unit should have been listed. The extended search was not conducted for vacant housing units.

The data obtained as part of the matching process include:

1. CPS control information.
2. Match status of the sample unit.
3. Match status of basic address containing the sample unit.
4. Census occupancy status of matching addresses.
5. Total number of units at basic address containing the sample unit, for units that could not be matched.
6. Census serial number for any matching or probably matching census units.
7. Type of group quarters, if applicable.

Chapter 4 contains detailed information on the weighting, estimation, and variance estimation procedures.

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<sup>3</sup>A combination of 6 and 7 above. Used until it was thought necessary to split the categories, the match codes for units assigned to this category were not changed.

## Limitations of the Data

The underenumeration rates presented in this report are based on observations made for a sample of units and therefore are subject to sampling variability.<sup>4</sup>

The P-Sample is an evaluation of the completeness of the address registers and not the microfilm or data tapes from which the final census counts are generated. To the extent that these two sources differ, the underenumeration rates obtained from the P-Samples will be affected.

The underenumeration rate may be inflated due to geocoding errors, both for the CPS sample units and the census listings which result in an incorrect assignment of cases to "not matched," "probably not matched," or the three "undetermined" groups. The impact of geocoding errors on the underenumeration rates for occupied housing units, while unknown, should have been reduced by conducting the extended search. Because the extended search was not conducted for vacant housing units, the underenumeration rates for vacant housing units will include the full effect of geocoding errors.

The reconciliation part of this evaluation took place in October and November 1981, approximately 18 months after Census Day (April 1, 1980). Recall bias, the bias caused by the inability of the respondent to recall information concerning a situation 18 months prior, is a factor in the results of the reconciliation. Since the reconciliation was a major factor in determining the match status of the

units followed up, recall bias is inherent in the match results. The direction and extent to which the gross underenumeration rate is affected is unknown.

In matching studies such as this, there are two types of errors inherent in the matching operation: (1) the matching of elements which are not the same and (2) the failure to match elements when in fact they exist in both sources. In this study, the elements to be matched were housing units and the magnitude of these kinds of errors is unknown. It is believed that the occurrence of erroneous matches, especially for occupied units, was rare since in many cases location (as determined by map spots and/or occupant's name) in addition to address was used in the matching process. Errors of the second type were probably less rare. Although exact numbers are not available, several cases which were "nonmatches" as a result of the clerical matching operation were later matched based on additional information acquired during field reconciliation. Thus, it seems reasonable that other units which remained classified as "nonmatches" and "probable nonmatches" were actually counted in the census.

More severe matching problems were encountered for vacant units, especially those in rural areas. CPS listers in these areas were prone to identify units by description, such as "yellow house with green shutters," rather than by address. Moreover, even when addresses were given, they were most often of a general nature, such as general delivery, route 1, etc. With no names with which to compare, it was very difficult to match such units, even with the aid of map spots.

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<sup>4</sup>Refer to chapter 4 for a detailed discussion of a standard error.



## Chapter 3.—The E-Sample, Methodology and Limitations

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### INTRODUCTION

The Housing Unit Coverage Studies (HUCS) E-Sample was designed to provide a means for estimating multiple enumerations of housing units that had multiple enumeration of one or more household members. The housing units that were included in the HUCS E-Sample were determined by the results of the Post Enumeration Program (PEP) E-Sample.

The PEP E-Sample was a sample of persons enumerated in the 1980 census. The purpose of the PEP E-Sample was to provide a means for estimating the number of persons who were erroneously enumerated in the census.

### METHODOLOGY

#### Background for PEP E-Sample Design

The Post Enumeration Program (PEP) E-sample design was a complex multistage stratified design. The first stage of sampling utilized the 643 sample areas selected for the Current Population Survey. These areas consist of many counties and independent cities with coverage in every State and the District of Columbia. These 643 sample areas were selected in a manner that provides reliable national estimates as well as State estimates. They include a series of expansions on the original 461-area design which was created after the 1970 census to provide only for reliable national estimates. A brief description of this expansion is provided below.<sup>1</sup>

<sup>1</sup>For a more detailed description of the Current Population Survey, see Bureau of the Census Technical Paper 40, *The Current Population Survey: Design and Methodology*; and Thomas F. Moore, Paul Bettin, Donna Kostanich and Gary M. Shapiro, *Overview of Current Population Survey Sample Design*. Paper presented at the American Statistical Association Annual Meeting, August 1979.

The 461-sample design had coverage in each State and the District of Columbia. These areas were selected by dividing the entire area of the United States into 1,931 primary sampling units (PSU's). With few exceptions each PSU consisted of a county or a number of contiguous counties. After the identification of the 1,931 PSU's, they were grouped into 376 strata. One hundred fifty-six of the largest PSU's comprised their own strata. The other strata were formed by combining PSU's within census geographic regions so that certain demographic characteristics were similar and their 1970 census population stratum totals were approximately equal.

In half of the strata containing more than one PSU, a single PSU was selected in a random manner. In the other half, two independent selections of PSU's were made in a random manner and with replacement. It occasionally happened that the same PSU in this instance was selected twice. This process resulted in the selection of 461 different PSU's from the 376 strata.

The expansion to 643 PSU's was done in stages during the decade to meet the requirements for more reliable State data. Basically this involved reviewing the reliability of each State's data from the 461 national design or the most previous expansion to determine if it met specified reliability requirements. If not, those States were restratified within State boundaries and additional PSU's were selected.

Two stages of selecting sample households within PSU's were used for the PEP E-Sample. The basis for the sample selection was ED's as defined for the 1980 census. In the first stage of selection, a sample of ED's was chosen with probability proportionate to a measure of the size of the ED's. These measures of size were based on precensus address counts

for tape address register and prelist ED's and precensus estimates for conventional ED's. In the second stage, within each sampled ED a cluster of approximately 10 noncontiguous households was selected in a systematic manner from a 1980 census listing of the households enumerated in the ED. By this method, approximately 110,000 households were selected for the E-Sample. A housing unit eligible for inclusion in the E-Sample was defined as one that was a regular living quarters or a housing unit in a special place and was occupied, vacant, or unclassified in the census.

In addition to the sample of housing units, a sample of persons living in institutional or noninstitutional group quarters was selected for the PEP E-Sample. These cases were considered out-of-scope for the HUCS E-Sample.

#### Processing for PEP E-Sample Relevant to HUCS

One of the purposes of the PEP E-Sample was to estimate census geocoding error rates at the ED level. To do this, field interviewers were provided with interview forms containing the address of the sample unit and a packet of census maps which included the ED in which the unit was sampled and the ED's surrounding it. In prelist and conventional areas, the interview form also contained the addresses of the units listed immediately before and immediately after the sample unit in the address register (prelist or conventional, as appropriate). The interviewers entered a spot on the census map to indicate the location of the sample housing unit. In addition, the interviewers also provided a geographic description of the unit's location on the interview form by recording the name of the street on which they were travelling, the side of the street on which

the unit was located, and the immediately preceding and immediately succeeding street or landmark they passed.

The interview forms and spotted maps were returned to the regional offices where office personnel coded the map spot to district office, tract, ED, and block codes. They also identified the geographic codes for the unit using the interviewers' written geographic descriptions. If the coding corresponding to the geographic description disagreed with the coding according to the map spot, the codes based on the geographic description were recorded instead. The geographic codes recorded on the interview forms as a result of this map spot operation are referred to as "field geocodes."<sup>2</sup>

Subsequent to and independent of the recording of field geocodes, the census geocodes<sup>3</sup> (district office, tract, ED, and block) were transcribed to the interview form and compared to the field geocodes. Cases which disagreed at the tract or ED level (excluding ED suffix) were reconciled by field interviewers to determine which geocodes were correct.<sup>4</sup>

As part of the reconciliation, field interviewers prepared a sketch map showing the location of each unit which was enumerated in the wrong ED by the census. These maps were sent to one of the Bureau's processing offices where each housing unit was geocoded from one to a maximum of four ED's. If the census ED was not among the list of ED's provided, a map search operation was performed to determine if additional ED's should be added to the list. The additional ED's could have included the census ED. This entire procedure is referred to as the "sketch map operation."

Another purpose of the PEP E-Sample was to estimate the multiple enumeration rate for persons. A within-ED duplicate search operation was performed on half of the E-Sample cases in each ED. The

census questionnaires were obtained for these cases and all surnames from these questionnaires were recorded. All questionnaires in the same ED were searched for surnames that agreed with or were similar to one or more of those in the sample household. If agreement or similarities were found, the names and demographic characteristics of both the sample household and the potentially matching household were recorded.

Three levels of matching were used to determine whether the persons identified above matched. The Level One match rules were simple and straightforward, designed to handle "obvious" matches. The Level Two match rules were more flexible, allowing for some minor discrepancies between the two records, such as minor age differences or use of nicknames in one source but not the other. The Professional Review match rules were used by Washington personnel to resolve all cases which had not been solved by Level One or Level Two match rules.

A search for duplicates between ED's was performed for sketch map cases which were geocoded to more than one ED, one of which was the census ED. The names and demographic characteristics of the household were recorded as well as all non-census ED's listed on the sketch map, one ED per form. A search for these names on microfilm<sup>5</sup> of the census questionnaires for each such ED was conducted using Level One match rules.

### Identification of Sample Units for the HUCS E-Sample

The HUCS comprised both within-ED cases and between-ED cases. The within-ED portion consisted of all cases where the PEP had identified duplicate persons in the Within-ED Duplicate Persons Check. The between-ED portion had two parts: (1) all cases where the original PEP field geocodes disagreed<sup>6</sup> with the census geocodes (excluding consideration of ED suffix) and (2) all cases where duplicate

persons were found in the PEP Between-ED Duplicate Persons Check. This resulted in the identification of 6,274 sample cases: 675 within ED cases, 5,596 between-ED geocode discrepancy cases, and 3 between-ED PEP duplicate persons cases.

### Evaluation Operations for the HUCS E-Sample

The purpose of the HUCS E-Sample was to measure overenumeration of housing units for which one or more household members were overenumerated. During the PEP processing, an overenumeration of household members had been identified for both the within-ED cases and the between-ED duplicate persons cases.

The between-ED geocode discrepancy cases were processed to determine overenumeration of household members. The ED's in which the search was conducted included the field ED, the reconciliation ED (if it differed from the census or field ED's), and the list of ED's from the PEP sketch map operation if the list did not contain the census ED.<sup>7</sup> The search procedures were very similar to those used for the PEP within-ED duplicate persons search, including the three levels of matching. The major difference was that the microfilm copies of the census questionnaires were used rather than the actual copy. If no overenumeration of household members was found during the search, the housing unit was considered not overenumerated.

Some of the cases selected as between-ED geocode discrepancy cases did not have an entry for the field DO and/or ED and/or reconciliation DO and/or ED. The maps used by the PEP interviewers were obtained for these cases and the missing geocodes were determined using the PEP rules. If the field ED geocodes agreed with the census ED, the housing unit was considered not overenumerated.

All of the between-ED and within-ED cases with overenumeration of household members were assigned to field follow-up.

<sup>2</sup>"Field DO" and "field ED" refer to these geocodes for a sample unit.

<sup>3</sup>Census geocodes are the geographic codes that refer to the location in which the sample unit was sampled in the census records. "Census DO" and "census ED" are census geocodes.

<sup>4</sup>"Reconciliation DO" and "reconciliation ED" refer to the geocoding for a sample unit that was determined by the reconciliation interviewers.

<sup>5</sup>By the time of the search, the original census questionnaires had been destroyed.

<sup>6</sup>If the field geocodes for DO and ED were blank for a given housing unit, the unit was included in the HUCS E-Sample.

<sup>7</sup>Note that this list could contain the field and/or reconciliation ED's. If the list contained the census ED, the ED's on the list were searched in the PEP.

The purpose of the follow-up was to obtain enough information to determine if the sample housing unit had been overenumerated.

For the follow-up, the interviewers were provided with the address of the sample unit and the address of the unit where the sample household had been overenumerated. In prelist areas, they also were given the PEP map with the location of the sample unit spotted. The census map spot locations for the sample unit and the possible duplicate unit were transferred to the PEP map, if they were available. The interviewers were instructed to locate each unit to determine if the two addresses identified the same housing unit, and to obtain a list of all April 1, 1980, housing units (including surnames of Census Day householders) at the basic address provided. In addition they contacted a household member at the sample address (or another knowledgeable respondent) and asked the respondent if he/she knew why someone in the April 1, 1980, household was enumerated twice in the 1980 census.

The follow-up results for each case were reviewed to ascertain if additional information were required to determine if the housing unit had been overenumerated. If additional data were required, the case was sent back to the field with specific instructions.

After field work, each case was assigned a code of duplicate, no duplicate, noninterview, or out-of-scope. In general, whenever the net result was an increase in the total count of occupied housing units, a code of "duplicate" was

assigned. If the net result was no increase in the total count of occupied housing units, a code of "no duplicate" was assigned. If there was not enough information available to determine the effect on the total count of occupied housing units, a code of "noninterview" was assigned. If the results of the follow-up indicated that the unit did not meet the selection criteria, it was assigned a code of "out-of-scope." Each case that was coded "duplicate" was assigned a "reason for duplicate" code based on the evidence presented in the census address listings and follow-up materials.

## LIMITATIONS OF THE DATA

The overenumeration rates presented in this report are based on observations made for a sample of units and therefore are subject to sampling variability.<sup>8</sup>

The amount of residual error in the PEP E-Sample geocoding is quite small. While some areas of the country have larger numbers of errors than others, the error at the national level is insignificant. At this level, the number of erroneous enumerations in the PEP may be slightly understated, and as a result so may be the number of cases selected for the HUCS E-Sample. The effect of this on the estimate of overenumerations in the HUCS E-Sample is unknown.

The E-Sample measured the extent of

overenumeration of occupied housing units, so cases were identified as duplicates only if the net result was an increase in the total occupied housing unit count. Thus vacant housing units were excluded from this study.

This study included only occupied housing units with multiple enumeration of household members. Thus it excludes occupied housing units whose household members were not overenumerated. Among the units excluded are those for which the address was duplicated but none of the occupants were overenumerated.

The between-ED portion of this study only includes housing units which were identified as possible geocoding problems. Housing units can be overenumerated between ED's for a variety of other reasons, such as clerical errors in the district office and prelisting errors (units overlisted by the prelist enumerators).

The reconciliation part of this evaluation took place primarily in October and November 1981, approximately 18 months after Census Day (April 1, 1980). Recall bias caused by the inability of the respondent to recall information concerning a situation 18 months prior, is a factor in the results of the follow-up. In addition, there is evidence that many interviewers suggested possible reasons for duplication to the respondent. Since the follow-up results determined whether a unit was considered overenumerated, recall bias and interviewer bias are inherent in the results. The direction and extent to which the overenumeration rates are affected is unknown.

<sup>8</sup>Refer to chapter 4 for a detailed discussion of a standard error.



## Chapter 4.—Reliability of the Data

### INTRODUCTION

The Housing Unit Coverage Studies (HUCS) consisted of two surveys: the P-Sample and the E-Sample. The housing units included in the P-Sample were those which were designated for interview in the April 1980 A-design of the Current Population Survey. The E-Sample was based on a sample of housing units enumerated in the 1980 census. Chapters 2 and 3 provide more details on the sample designs for the P- and E-Samples, respectively.

### ESTIMATION FOR THE P-SAMPLE

Several distinct steps are included in the transformation of raw survey data into the published estimates. These steps include:

1. Preparation of unbiased estimate.
2. Adjustment for non-interview.
3. First-stage ratio estimates based on ratios of 1970 census totals for selected 1980 census geographic categories to estimates of these totals based on 1970 census totals for the sample primary sampling units (PSU's).
4. Second-stage ratio estimates based on ratios of independent estimates of selected housing characteristics from the Second Quarter 1980 Quarterly Housing Survey to the first-stage ratio estimates of totals of these groups from the sample.
5. Selecting the appropriate estimator.

### Preparation of Unbiased Estimates

A simple unbiased estimate of the population total for any characteristic investigated in the survey may be made by multiplying the value of that characteristic for each sample unit by the reciprocal of the probability with which the unit was

selected and summing the products over all units in the sample. Strictly speaking, this method gives an estimate of the population total for "interviewed" housing units. In this study, interviewed units are those which were assigned a match code of "M," "PM1," "PM2," "PNM," or "NM." The table below shows an unweighted frequency distribution for the final match codes.

Table 66. Unweighted Frequency Distribution for P-Sample Final Match Codes

(Match codes are described in Chapter 2)

Match code	Frequency	Percent
Total sample.....	37 403	100.0
M.....	34 763	92.9
PM1.....	45	0.1
PM2.....	368	1.0
PNM.....	126	0.3
NM.....	774	2.1
U.....	33	0.1
U1.....	154	0.4
U2.....	63	0.2
Out-of-scope.....	1 077	2.9

### Adjustment for Noninterview

In this discussion, "noninterview" refers to those housing units which were assigned a match code of "U," "U1," or "U2." There was not enough information available for these units to draw any conclusions concerning their census enumeration status. Generally for the noninterviews, the information from the census and the CPS was poor; the codes assigned reflect the source that seemed more incomplete. In this study, no use was ever made of the different categories of noninterviews.

To adjust for noninterviews in tabulation, noninterview adjustment factors are applied to interviewed housing units. These factors are calculated separately for each of the noninterview adjustment cells. The following are the cells used for each

census region (Northeast, Midwest, South, West):

1980 geographic category	CPS occupancy status	
	Occupied housing unit <sup>1</sup>	Vacant housing unit
Inside SMSA Central city.....		
Balance of SMSA.....		
Outside SMSA Urban.....		
Rural.....		

<sup>1</sup>Included CPS Type A noninterviews (refusals, etc.) and housing units occupied by Armed Forces members (out-of-scope for CPS).

The noninterview adjustment factors were calculated by tabulating separately the numbers of interviewed and noninterviewed housing units into each of the noninterview adjustment cells. Weighted counts of housing units are used where the weight is the reciprocal of the probability of selection. For each of the noninterview cells the following ratio is computed:

$$\frac{\text{Interviewed housing units} + \text{Noninterviewed housing units}}{\text{Interviewed housing units}}$$

These ratios were applied to data for each interviewed housing unit in the corresponding cells.

### First-Stage Ratio Adjustments

Part of the variance of an estimate results from the fact that a sample of 376 PSU's were selected from the universe of 1,924 PSU's. Even if all of the housing units in these sample PSU's were included in the survey, this component of variance would still be present. The purpose, then, of the first-stage ratio adjustment is to reduce this component's contribution to the total variance for an estimate.

The first-stage factors were based on 1970 census data but were calculated for 1980 census geographic definitions. This

was done because the HUCS P-Sample design was based on 1970 census characteristics while the estimates produced from the data were based on 1980 census geographic categories. The first-stage ratios are applied to non-self-representing (NSR) PSU's only. The cells for which these ratios were calculated are the following for each census region (Northeast, Midwest, South, West):

1980 geographic category	CPS occupancy status	
	Occupied housing unit <sup>1</sup>	Vacant housing unit
Inside SMSA Central city.....		
Balance urban...		
Balance rural...		
Outside SMSA Urban.....		
Rural.....		

<sup>1</sup>Included CPS Type A noninterviews (refusals, etc.) and housing units occupied by Armed Forces members (out-of-scope for CPS).

The following description of the ratio indicates the computation:

1970 census housing units in the cell for NSR strata in the region

Estimates of these housing units based on the 1970 housing counts for sample PSU's

The estimate used in the denominator of each of the ratios was obtained by multiplying the census housing unit counts in the appropriate cell for each PSU by the reciprocal of the probability of selection for that PSU and summing over all non-self-representing PSU's in the stratum in the region.

## Second-Stage Ratio Adjustments

The second-stage ratio estimate adjusts sample estimates of housing units in a number of cells to independently derived current estimates of housing units in each of these cells. The independent estimates used for the P-Sample were the control counts for the Second Quarter Quarterly Housing Survey in 1980. The following cells were used:

Geographic category	CPS tenure	
	Owner-occupied	Renter-occupied
SMSA Central city.....		
Balance.....		
Non-SMSA.....		

## Selecting An Appropriate Estimator

Because there were several match codes assigned that reflected uncertainty as to whether a housing unit was matched, there were a number of ways that the estimate of the gross underenumeration rate could be formed. The match codes assigned are:

M The CPS sample unit was matched.

PM1 The CPS sample unit was matched but not to a specific, unique listing.

PM2 The preponderance of evidence indicated that the CPS sample unit was probably matched.

PNM The preponderance of evidence indicated that the CPS sample unit was probably not matched.

NM The CPS sample unit was not matched.

The estimator (1) used in this study was:

Gross Miss Rate =

$$\frac{PNM + NM}{M + PM1 + PM2 + PNM + NM} \times 100$$

where M, PM1, PM2, PNM, and NM each are weighted counts of sample units assigned that particular match code.

Other estimators would have produced estimates of the gross underenumeration rate which differ from those shown in this report. The estimator (2)

$$\text{Gross Miss Rate} = \frac{NM}{M + NM} \times 100$$

would have produced a national gross underenumeration rate estimate of 1.38 percent (s.e. = 0.08). This rate is significantly different from the rate of 1.5 percent (s.e. = 0.08) which is published in this report. At the other extreme, the estimator (3)

Gross Miss Rate =

$$\frac{PM1 + PM2 + PNM + NM}{M + PM1 + PM2 + PNM + NM} \times 100$$

would have estimated the national gross underenumeration rate as 2.12 percent (s.e. = 0.12). This rate is significantly different from the rate published in this report.

The estimator (2) does not use all of the available data. The estimator (3) uses all of the sample data and assumes that all cases are nonmatches except those coded "M." The estimator (1) uses all of the sample data and assumes that cases coded "M," "PM1," and "PM2" are matches while those coded "PNM" are nonmatches. Estimator (1) was chosen because it more closely reflects the intent of the various match code categories.

## ESTIMATION FOR THE E-SAMPLE

The distinct steps for transforming the raw survey data into the published estimates are the following:

1. Preparation of unbiased estimates.
2. Adjustment for noninterview.
3. First-stage ratio estimates based on ratios of 1970 census totals for selected population categories to estimates of these totals based on 1970 census totals for the sample PSU's.
4. Adjustment for multiple probabilities of selection.

## Preparation of Unbiased Estimates

As described in the discussion of the P-Sample estimation, a simple unbiased estimate of the population total for any characteristic investigated in the survey may be made by multiplying the value of that characteristic for each sample unit by the reciprocal of the probability of selection and summing the products over all units in the sample. Strictly speaking, this method gives an estimate of population total for "interviewed" units. In this study, interviewed units are those which were assigned a duplication code of "D1," "D2," "D3," or "ND." The table below shows a frequency distribution for the duplication codes.

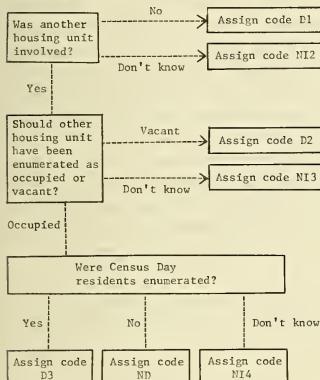
Table HH. Unweighted Frequency Distribution for E-Sample Duplication Codes

(Duplication codes are described in Chapter 3)		
Duplication code	Frequency	Percent
Total sample.....	6 279	100.0
D1.....	575	9.2
D2.....	69	1.1
D3.....	25	0.4
ND.....	5 543	88.3
NI1.....	51	0.8
NI3.....	8	0.1
NI4.....	8	0.1

## Adjustment for Noninterview

In this discussion, "noninterview" refers to those housing units which were assigned a duplication code of "NI2," "NI3," or "NI4." One could view the process of determining duplication codes as a decision tree, where the final branch is determined by a series of decisions, as shown in the flow chart.

### Flow Chart for Assigning Final Codes



For this study, the decision tree had three levels:

1. Was another housing unit involved?
2. Was the other unit vacant or occupied?
3. Were household members of the other unit enumerated?

At each stage a noninterview resulted when the answer to the question was unknown. If the answer was known, the process either stopped at that level or moved to the next level. In adjusting for noninterviews, it was assumed at each level in the decision tree that noninterviewed units would either move to the next level or remain at the current level in the same proportion that the interviewed housing units did. The final noninterview adjustment factors were calculated for each level and were applied to each housing unit. Noninterview factors were calculated separately for within-ED and between-ED cases for the following cells within each census region (Northeast, Midwest, South, West):

1980 geographic category	Size of structure for sample address	
	Single-unit	Multi-unit
Inside SMSA Central city.....		
Balance of SMSA.....		
Outside SMSA Urban.....		
Rural.....		

At each level the noninterview adjustment factor applied to interviewed housing units could have three values. It had the value of 1.0 if the unit were determined to be a duplicate enumeration at a lower level. It had the value of

Weighted sum of all housing units at this level  
(Weighted sum of all interviewed housing units at this level + weighted sum of all housing units above this level)

for all interviewed units at this level and all units above this level. The weight used was the reciprocal of the probability of selection. The third value that the noninterview adjustment factor could have on a level was 0.0. This value was assigned to noninterviews that arose at this or lower levels. The final value of the noninterview adjustment factor for a particular sample unit was the product of the values at each of the three levels.

### First-Stage Ratio Adjustments

The purpose of the first-stage ratio adjustment is to reduce the component of total variance that arises from the sampling of PSU's. The first-stage factors were based on 1970 census data and 1970 census geographic characteristics. The first-stage ratios were applied to non-self-representing PSU's only. The cells for which these ratios were calculated are the same ones used for the Current Population Survey,<sup>1</sup> except that the cells were further collapsed by Urban/Rural and Farm/Nonfarm.

### Adjustments for Multiple Probabilities of Selection

Factors were applied to the weights for each sample unit to adjust for the multiple

probabilities of selection due to multiple enumerations.

## VARIANCE ESTIMATION

The replication variance procedure<sup>2</sup> was used for both the P- and E-Samples. The replicate method is based on recalculating the final weights after the application of a replicate weight to each housing unit. The final weights are recalculated as many times as necessary to form the desired number of replicates. The number of replicates used for the P-Sample was 49 and for the E-Sample, 50.

## RELIABILITY OF THE ESTIMATES

Since the estimates presented in this report are based on samples, they may differ somewhat from the figures that would have been obtained had all housing units been processed using the same procedures, questionnaires, enumerators, clerical staff, and reviewers. There are two types of errors possible in an estimate based on a sample survey: nonsampling and sampling.

### Nonsampling Variability

Nonsampling errors can be attributed to many sources, e.g., inability to obtain information about all cases in the sample, definitional difficulties, differences in interpretation of questions, inability or unwillingness on the part of respondents to provide correct information, errors made in collection such as in recording the data, errors made in processing the data, and failure to represent all units with the sample. The full extent of nonsampling errors is unknown. The "Limitations" section in chapters 2 and 3 provide more details on nonsampling variability.

### Sampling Variability

The standard errors given in this report primarily are measures of sampling vari-

<sup>1</sup>See Bureau of the Census Technical Paper Number 40, *The Current Population Survey: Design and Methodology*, pages 58 and 59, for a detailed description of these cells.

<sup>2</sup>For a detailed description of the replication method of variance estimation, see Cathryn S. Dippo, Robert E. Fay, and David H. Morgenstern, *Computing Variances From Complex Samples With Replicate Weights*. Paper presented at the American Statistical Association Annual Meeting, August 1984.

ability; i.e., the variation that occurred by chance because a sample rather than the entire population was surveyed. They also partially measured the effect of some non-sampling errors in response and enumerations, but do not measure any systematic biases in the data. The sample estimate and its standard error enable one to construct confidence intervals, ranges that would include the average result of all possible samples with a known probability. For example, if all possible samples were selected, each being surveyed under essentially the same general conditions and using the same sample design, and if an estimate and its standard error was calculated from each sample, then:

1. Approximately 68 percent of the intervals from one standard error below the estimate to one standard error above the estimate would include the average result of all possible samples.

2. Approximately 90 percent of the intervals from 1.6 standard errors below the estimate to 1.6 standard errors above the estimate would include the average result of all possible samples.
3. Approximately 95 percent of the intervals from two standard errors below the estimate to two standard errors above the estimate would include the average result of all possible samples.

The average estimate derived from all possible samples is or is not contained in any particular computed interval. However, for a particular sample, one can say with a specified confidence that the average estimate derived from all possible samples is included in the confidence interval.

Standard errors may also be used to perform hypothesis testing, a procedure for distinguishing between population parameters using sample estimates. The

most common hypothesis test is testing whether: (1) the population parameters are identical versus (2) they are different. Tests may be performed at various levels of significance, where a level of significance is the probability of concluding that the parameters are different when, in fact, they are identical. All statements of comparison in the text have passed a hypothesis test at the 0.10 level of significance or better, and most have passed a hypothesis test at the 0.05 level of significance or better. This means that, for most differences cited in the text, the estimated difference between parameters is greater than twice the standard error of the difference. For the other differences mentioned, the estimated difference between parameters is between 1.6 and 2.0 times the standard error of the difference. When this is the case, the statement of comparison will be qualified in some way, e.g., by use of the phrase "some evidence."

Table 1. Housing Unit Counts for Various Characteristics: 1980

Category	Housing units	Occupied housing units	Vacant housing units	Occupied housing units in single-unit structures	Occupied housing units in multi-unit structures	Occupied housing units minus closeouts
United States.....	88 411 263	80 389 673	8 021 590	61 944 821	18 444 852	79 150 529
REGIONS						
Northeast.....	19 086 593	17 470 616	1 615 977	11 060 949	6 409 667	17 251 863
Midwest.....	22 822 059	20 859 206	1 962 853	16 605 760	4 293 446	20 611 870
South.....	29 419 692	26 486 217	2 933 475	22 196 012	4 290 205	25 938 354
West.....	17 082 919	15 573 634	1 509 285	12 082 100	3 491 534	15 348 442
URBAN/RURAL STATUS						
Urban.....	64 938 861	60 551 717	4 387 144	43 361 833	17 189 884	59 644 482
Rural.....	23 472 402	19 837 956	3 634 446	18 582 988	1 254 968	19 506 047
SMSA STATUS						
Inside SMSA's.....	65 116 035	60 497 718	4 618 317	44 309 726	16 187 992	59 546 918
Outside SMSA's.....	23 295 228	19 891 955	3 403 273	17 635 095	2 256 860	19 603 611
ENUMERATION AREAS						
Tape address register.....	47 304 359	44 414 214	2 890 165	30 103 699	14 310 515	43 705 938
Prelist.....	36 772 834	32 577 424	4 195 410	28 950 583	3 626 841	32 085 868
Recanvassed.....	17 088 923	14 998 158	2 090 765	13 455 730	1 542 428	14 750 164
Not recanvassed.....	19 683 911	17 579 266	2 104 645	15 494 853	2 084 413	17 335 704
Conventional.....	4 334 070	3 398 035	936 035	2 890 539	507 496	3 358 723
SIZE OF STRUCTURE						
Single-unit.....	67 487 027	61 944 821	5 542 206	61 944 821	...	(NA)
Multi-unit.....	20 924 236	18 444 852	2 479 384	...	18 444 852	(NA)

(NA) means not available; ... means not applicable.

Table 2. Estimated Underenumeration Rates for Housing Units: 1980

Category	Underenumeration rate for total housing units	Standard error of rate	Underenumeration rate for occupied housing units	Standard error of rate	Underenumeration rate for vacant housing units	Standard error of rate
United States.....	2.60	0.12	1.50	0.08	12.56	0.79
REGIONS						
Northeast.....	2.85	0.23	1.59	0.14	13.36	1.34
Midwest.....	2.44	0.25	1.33	0.14	13.21	2.06
South.....	3.03	0.20	1.82	0.15	13.33	1.40
West.....	1.74	0.28	1.08	0.16	8.72	1.58
URBAN/RURAL STATUS						
Urban.....	1.98	0.12	1.32	0.09	9.27	0.94
Rural.....	4.18	0.26	1.98	0.20	17.37	1.29
SMSA STATUS						
Inside SMSA's.....	2.21	0.13	1.41	0.08	10.76	0.97
Outside SMSA's.....	3.39	0.25	1.69	0.18	15.01	1.21
ENUMERATION AREAS						
Tape address register.....	1.96	0.14	1.33	0.09	9.23	1.25
Prelist.....	3.31	0.17	1.76	0.14	15.25	1.14
Conventional.....	2.75	0.76	0.98	0.30	12.24	3.60

Table 3. Estimated Overenumeration Rates for Occupied Housing Units: 1980

(Study limited to investigation of occupied units from Post Enumeration Program E-Sample having overenumeration of at least one household member. In addition, units included in "Between enumeration districts" portion limited to those having evidence of possible geographic coding problems)

Category	Total	Within enumeration districts		Between enumeration districts		
	Overenumeration rate	Standard error of rate	Overenumeration rate	Standard error of rate	Overenumeration rate	Standard error of rate
United States.....	0.86	0.04	0.48	0.03	0.38	0.02
REGIONS						
Northeast.....	0.91	0.08	0.66	0.07	0.25	0.04
Midwest.....	0.60	0.06	0.35	0.04	0.25	0.04
South.....	1.14	0.07	0.54	0.05	0.60	0.05
West.....	0.66	0.07	0.34	0.05	0.32	0.05
URBAN/RURAL STATUS						
Urban.....	0.70	0.04	0.42	0.03	0.28	0.02
Rural.....	1.36	0.09	0.67	0.06	0.69	0.06
SMSA STATUS						
Inside SMSA's.....	0.77	0.04	0.45	0.03	0.32	0.02
Outside SMSA's.....	1.14	0.08	0.57	0.06	0.57	0.06
ENUMERATION AREAS						
Tape address register.....	0.69	0.04	0.40	0.03	0.29	0.03
Prelist.....	1.17	0.07	0.63	0.05	0.54	0.04
Recanvassed.....	1.22	0.10	0.63	0.07	0.59	0.07
Not Recanvassed.....	1.13	0.09	0.63	0.07	0.50	0.06
Conventional.....	0.11	0.05	0.09	0.04	0.02	0.01
SIZE OF STRUCTURE						
Single-Unit.....	0.90	0.04	0.46	0.03	0.44	0.03
Multi-Unit.....	0.67	0.06	0.53	0.06	0.14	0.03

Table 4. Estimated Frequencies for Reasons of Overenumeration for Occupied Housing Units: 1980

(Study limited to investigation of occupied units from Post Enumeration Program E-Sample having overenumeration of at least one household member. In addition, units included in "Between enumeration districts" portion limited to those having evidence of possible geographic coding problems)

Category	Overenumerations (number)	Overenumeration rate	Standard error of rate	Geographic coding error		Movers		Apartment mixups		
				Frequency (percent)	Standard error	Frequency (percent)	Standard error	Frequency (percent)	Standard error	
United States.....	680 987	0.86	0.04	27.5	1.8	2.2	0.6	7.2	1.1	
<b>REGIONS</b>										
Northeast.....	157 966	0.91	0.08	18.6	3.3	1.2	0.9	12.5	2.8	
Midwest.....	124 800	0.60	0.06	33.4	4.5	2.3	1.4	6.5	2.4	
South.....	296 437	1.14	0.07	31.7	2.9	2.9	1.0	5.9	1.5	
West.....	101 784	0.66	0.07	21.7	4.4	1.5	1.3	3.6	2.0	
<b>URBAN/RURAL STATUS</b>										
Urban.....	415 712	0.70	0.04	21.5	2.2	1.9	0.7	9.8	1.6	
Rural.....	265 275	1.36	0.09	36.9	3.2	2.6	1.0	3.1	1.1	
<b>SMSA STATUS</b>										
Inside SMSA's.....	457 390	0.77	0.04	23.2	2.1	2.1	0.7	9.0	1.4	
Outside SMSA's.....	223 597	1.14	0.08	36.2	3.4	2.4	1.1	3.5	1.3	
<b>ENUMERATION AREAS</b>										
Tape address register.....	300 880	0.69	0.04	15.1	2.2	1.7	0.8	10.0	1.9	
Prelist.....	376 460	1.17	0.07	37.0	2.7	2.5	0.9	5.1	1.2	
Recanvassed.....	180 022	1.22	0.10	32.8	3.8	3.7	1.5	4.6	1.7	
Not recanvassed.....	196 438	1.13	0.09	40.7	3.8	1.5	0.9	5.5	1.7	
Conventional.....	3 647	0.11	0.05	69.1	25.9	7.7	15.0	0.0	0.0	
<b>ADDRESS TYPES</b>										
House number/street name.....	491 169	(NA)	(NA)	25.1	2.1	1.1	0.5	9.1	1.4	
Rural route and box.....	89 639	(NA)	(NA)	28.8	5.1	3.0	1.9	1.5	1.4	
Rural route only.....	49 199	(NA)	(NA)	48.8	7.6	5.5	3.5	3.7	2.9	
Post office box.....	40 715	(NA)	(NA)	27.2	7.5	9.2	4.8	2.7	2.7	
Other.....	10,266	(NA)	(NA)	30.2	15.4	0.0	0.0	0.0	0.0	
<b>OVERENUMERATION TYPES</b>										
Between enumeration districts.....	300 932	...	...	33.4	2.9	0.7	0.5	0.9	0.6	
Within enumeration districts.....	380 055	...	...	22.8	2.3	3.3	1.0	12.3	1.8	
Category	Uses more than one home or apartment		Incomplete or incorrect address		District office errors		Uses more than one address		Other	
	Frequency (percent)	Standard error	Frequency (percent)	Standard error	Frequency (percent)	Standard error	Frequency (percent)	Standard error	Frequency (percent)	
United States.....	2.1	0.6	6.6	1.0	44.3	2.0	7.3	1.1	2.8	0.7
<b>REGIONS</b>										
Northeast.....	4.9	1.8	3.5	1.6	49.6	4.3	6.4	2.1	3.3	1.5
Midwest.....	0.7	0.8	6.4	2.4	43.3	4.8	4.5	2.0	2.9	1.6
South.....	1.0	0.6	9.1	1.8	36.6	3.0	10.3	1.9	2.5	1.0
West.....	2.2	1.6	4.6	2.2	59.5	5.2	3.6	2.0	3.3	1.9
<b>URBAN/RURAL STATUS</b>										
Urban.....	2.7	0.9	3.2	0.9	54.4	2.6	3.9	1.0	2.6	0.8
Rural.....	0.9	0.6	12.0	2.1	28.5	3.0	12.7	2.2	3.3	1.2
<b>SMSA STATUS</b>										
Inside SMSA's.....	2.4	0.8	3.2	0.9	52.1	2.5	5.4	1.1	2.6	0.8
Outside SMSA's.....	1.3	0.8	13.8	2.5	28.3	3.2	11.2	2.3	3.3	1.3
<b>ENUMERATION AREAS</b>										
Tape address register.....	3.3	1.1	2.6	1.0	62.6	3.0	2.3	0.9	2.4	0.9
Prelist.....	1.0	0.5	9.9	1.7	30.0	2.5	11.3	1.8	3.2	1.0
Recanvassed.....	2.1	1.1	8.6	2.2	30.5	3.7	12.7	2.7	5.0	1.7
Not recanvassed.....	0.0	0.0	11.1	2.4	29.6	3.5	10.1	2.3	1.5	0.9
Conventional.....	0.0	0.0	7.3	14.6	3.8	10.7	7.6	14.9	4.5	11.6
<b>ADDRESS TYPES</b>										
House number/street name.....	2.2	0.7	3.7	0.9	50.4	2.4	5.2	1.1	3.2	0.9
Rural route and box.....	1.5	1.4	12.5	3.7	39.3	5.5	12.6	3.8	0.8	1.0
Rural route only.....	0.0	0.0	18.2	5.9	15.5	5.5	8.3	4.2	0.0	0.0
Post office box.....	3.7	3.2	5.0	3.7	22.7	7.0	22.2	7.0	7.3	4.4
Other.....	0.0	0.0	48.1	16.7	21.7	13.8	0.0	0.0	0.0	0.0
<b>OVERENUMERATION TYPES</b>										
Between enumeration districts.....	0.7	0.5	6.3	1.5	52.1	3.1	5.1	1.4	0.8	0.6
Within enumeration districts.....	3.1	0.9	6.9	1.4	38.1	2.7	9.1	1.6	4.4	1.1

(NA) means not available; ... means not applicable.

Table 5. Estimated Overenumeration Rates for Occupied Housing Units for Various Characteristics by Size of Structure: 1980

(Study limited to investigation of occupied units from Post Enumeration Program E-Sample having overenumeration of at least one household member. In addition, units included in "Between enumeration districts" portion limited to those having evidence of possible geographic coding problems)

Category	Single-unit structures						Multi-unit structures					
	Total		Within enumeration districts		Between enumeration districts		Total		Within enumeration districts		Between enumeration districts	
	Overenumeration rate	Standard error of rate	Overenumeration rate	Standard error of rate	Overenumeration rate	Standard error of rate	Overenumeration rate	Standard error of rate	Overenumeration rate	Standard error of rate	Overenumeration rate	Standard error of rate
United States.....	0.90	0.04	0.46	0.03	0.44	0.03	0.67	0.06	0.53	0.06	0.14	0.03
REGIONS												
Northeast.....	0.96	0.10	0.64	0.08	0.32	0.06	0.81	0.12	0.68	0.11	0.13	0.05
Midwest.....	0.60	0.06	0.31	0.05	0.29	0.04	0.60	0.13	0.52	0.12	0.08	0.05
South.....	1.22	0.08	0.54	0.05	0.68	0.06	0.59	0.13	0.48	0.11	0.11	0.06
West.....	0.67	0.08	0.34	0.06	0.33	0.06	0.59	0.14	0.33	0.10	0.26	0.09
URBAN/RURAL STATUS												
Urban.....	0.71	0.04	0.38	0.03	0.33	0.03	0.63	0.06	0.50	0.06	0.13	0.03
Rural.....	1.34	0.09	0.63	0.06	0.71	0.07	1.22	0.33	0.97	0.30	0.25	0.15
SMSA STATUS												
Inside SMSA's.....	0.78	0.04	0.40	0.03	0.38	0.03	0.69	0.07	0.55	0.06	0.14	0.03
Outside SMSA's.....	1.20	0.09	0.59	0.06	0.61	0.06	0.52	0.16	0.39	0.14	0.13	0.08
ENUMERATION AREAS												
Tape address register.....	0.70	0.05	0.35	0.04	0.35	0.04	0.64	0.07	0.48	0.06	0.16	0.04
Prelist.....	1.19	0.07	0.60	0.05	0.59	0.05	0.88	0.17	0.78	0.16	0.10	0.06
Recanvassed.....	1.24	0.10	0.61	0.07	0.63	0.07	0.83	0.25	0.64	0.22	0.19	0.12
Not recanvassed.....	1.15	0.09	0.59	0.07	0.56	0.06	0.92	0.22	0.89	0.22	0.03	0.04
Conventional.....	0.13	0.07	0.11	0.06	0.02	0.03	0.00	0.00	0.00	0.00	0.00	0.00

Table 6. Frequency Distributions for Various Characteristics of Overenumerated Occupied Housing Units: 1980

(Study limited to investigation occupied units from Post Enumeration Program E-Sample having overenumeration of at least one household member. In addition, units included in "Between enumeration districts" portion limited to those having evidence of possible geographic coding problems)

Category	Percent of occupied housing units	Percent of occupied minus closeout housing units	Total			Within enumeration districts			Between enumeration districts		
			Number overenumerated	Frequency (percent)	Standard error of percent	Number overenumerated	Frequency (percent)	Standard error of percent	Number overenumerated	Frequency (percent)	Standard error of percent
United States.....	100.0	100.0	680 987	100.0	0.0	380 055	100.0	0.0	300 932	100.0	0.0
REGIONS											
Northeast.....	21.7	21.8	157 966	23.2	1.7	114 567	30.1	2.5	43 399	14.4	2.2
Midwest.....	26.0	26.0	124 800	18.3	1.6	72 666	19.1	2.2	52 134	17.3	2.3
South.....	32.9	32.8	296 437	43.5	2.0	140 564	37.0	2.7	155 873	51.8	3.1
West.....	19.4	19.4	101 784	15.0	1.5	52 258	13.8	1.9	49 826	16.5	2.3
URBAN/RURAL STATUS											
Urban.....	75.3	75.4	415 712	61.0	2.0	250 030	65.8	2.6	165 682	55.1	3.1
Rural.....	24.7	24.6	265 275	39.0	2.0	130 025	34.2	2.6	135 250	44.9	3.1
SMSA STATUS											
Inside SMSA's.....	75.3	75.2	457 390	67.2	1.9	267 298	70.3	2.5	190 092	63.2	3.0
Outside SMSA's.....	24.7	24.8	223 597	32.8	1.9	112 757	29.7	2.5	110 840	36.8	3.0
ENUMERATION AREAS											
Tape address register.....	55.3	55.2	300 880	44.2	2.0	175 118	46.1	2.7	125 762	41.8	3.0
Prelist.....	40.5	40.5	376 460	55.3	2.0	201 912	53.1	2.7	174 548	58.0	3.0
Recanvassed.....	46.0	46.0	180 022	47.8	2.8	92 515	45.8	3.8	87 507	50.1	4.1
Not recanvassed.....	54.0	54.0	196 438	52.2	2.8	109 397	54.2	3.8	87 041	49.9	4.1
Conventional.....	4.2	4.3	3 647	0.5	0.3	3 025	0.8	0.5	622	0.2	0.3
OVERENUMERATION TYPES											
Between enumeration districts.....	...	...	300 932	44.2	2.0	...	...	...	300 932	100.0	0.0
Within enumeration districts.....	...	...	380 055	55.8	2.0	380 055	100.0	0.0	...	...	...
ADDRESS TYPES											
House number/street name.....	(NA)	(NA)	491 169	72.1	1.8	302 336	79.6	2.2	188 833	62.7	3.0
Rural route and box.....	(NA)	(NA)	89 639	13.2	1.4	35 813	9.4	1.6	53 826	17.9	2.6
Rural route only.....	(NA)	(NA)	49 199	7.2	1.1	17 712	4.7	1.2	31 487	10.5	1.9
Post office box.....	(NA)	(NA)	40 715	6.0	1.0	17 710	4.7	1.2	23 005	7.6	1.6
Other.....	(NA)	(NA)	10 265	1.5	0.5	6 484	1.7	0.7	3 781	1.3	0.7
HOUSEHOLD ROSTER DUPLICATIONS											
Entire roster duplicated.....	...	...	596 274	87.6	1.4	331 906	87.3	1.8	264 368	87.8	2.0
Portion roster duplicated.....	...	...	84 713	12.4	1.4	48 149	12.7	1.8	36 564	12.2	2.0
SIZE OF STRUCTURES											
Single-unit.....	77.1	(NA)	557 594	81.9	1.6	282 414	78.3	2.4	275 180	91.4	1.7
Multi-unit.....	22.9	(NA)	123 393	18.1	1.6	97 641	25.7	2.4	25 752	8.6	1.7

(NA) means not available; ... means not applicable.

Table 7. Estimated Geographic Coding Error Overenumeration Rates for Occupied Housing Units by Source of Address by Type of Enumeration Area: 1980

(Study limited to investigation of occupied units from Post Enumeration Program E-Sample having overenumeration of at least one household number. In addition, units included in "Between enumeration districts" portion limited to those having evidence of possible geographic coding problems)

Source of address by enumeration area	Geographic coding errors <sup>1</sup>					
	Total		Within enumeration districts		Between enumeration districts	
	Overenumeration rate	Standard error of rate	Overenumeration rate	Standard error of rate	Overenumeration rate	Standard error of rate
<b>TOTAL ADDRESSES</b>						
United States.....	0.24	0.02	0.11	0.01	0.13	0.01
Tape address register.....	0.11	0.02	0.04	0.01	0.07	0.01
Prelist.....	0.43	0.04	0.22	0.03	0.21	0.03
Recanvassed.....	0.40	0.06	0.14	0.03	0.26	0.04
Not recanvassed.....	0.46	0.06	0.28	0.04	0.18	0.03
Conventional.....	0.08	0.05	0.07	0.05	0.01	0.01
<b>BOTH ADDRESSES PREPRINT</b>						
United States.....	0.12	0.01	0.06	0.01	0.06	0.01
Tape address register.....	0.02	0.01	0.02	0.01	0.00	0.00
Prelist.....	0.27	0.03	0.13	0.02	0.14	0.02
Recanvassed.....	0.25	0.04	0.07	0.02	0.18	0.04
Not recanvassed.....	0.29	0.04	0.18	0.03	0.11	0.03
Conventional.....	...	...	...	...	...	...
<b>ONLY ONE ADDRESS PREPRINT</b>						
United States.....	0.08	0.01	0.04	0.01	0.04	0.01
Tape address register.....	0.04	0.01	0.01	0.01	0.03	0.01
Prelist.....	0.15	0.02	0.09	0.02	0.06	0.01
Recanvassed.....	0.14	0.03	0.07	0.02	0.07	0.02
Not recanvassed.....	0.15	0.03	0.10	0.03	0.05	0.02
Conventional.....	...	...	...	...	...	...
<b>NEITHER ADDRESS PREPRINT</b>						
United States.....	0.04	0.01	0.01	0.003	0.03	0.01
Tape address register.....	0.05	0.01	0.01	0.004	0.04	0.01
Prelist.....	0.01	0.01	0.00	0.00	0.01	0.01
Recanvassed.....	0.01	0.01	0.00	0.00	0.01	0.01
Not recanvassed.....	0.02	0.01	0.00	0.00	0.02	0.01
Conventional.....	0.08	0.05	0.07	0.05	0.01	0.01

<sup>1</sup>Number of geographic coding errors:

... means not applicable.

Source of address	Within enumeration districts		
	Total	Within enumeration districts	Between enumeration districts
Total addresses.....	187 254	86 730	100 524
Both addresses preprint.....	94 450	49 086	45 364
Only one address preprint.....	65 865	32 826	33 039
Neither address preprint.....	26 939	4 818	22 121

## Appendix.—Principle Forms Used in Evaluating Housing Unit Coverage in the 20th Decennial Census

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\*These forms were completed during the Post Enumeration Program.



#### **Appendix.—Principle Forms Used in Evaluating Housing Unit Coverage in the 20th Decennial Census**

Appendix.—Principle Forms Used in Evaluating Housing Unit Coverage in the 20th Decennial Census

U. S. DEPARTMENT OF COMMERCE  
BUREAU OF THE CENSUS

HOUSING UNIT COVERAGE STUDIES  
P SAMPLE FINAL MATCH  
20th Decennial Census - 1980

CPS INFORMATION										CENSUS INFORMATION					
PSU	Serial number	Address			City (d)	State (e)	Name (6)	CPS occupancy status (7)	Final unit match code (8)	ED (13)	Serial number (15)	Census occupancy status (16)	CPS number of GQ (17)		
		House No. (1)	Street No. (2)	Street name (3)										Apartment no. (c)	Prefix (a)
1	1	1	1	1	1	1	1	1	1	1	1	1	1		
2	2	2	2	2	2	2	2	2	2	2	2	2	2		
3	3	3	3	3	3	3	3	3	3	3	3	3	3		
4	4	4	4	4	4	4	4	4	4	4	4	4	4		
5	5	5	5	5	5	5	5	5	5	5	5	5	5		
6	6	6	6	6	6	6	6	6	6	6	6	6	6		
7	7	7	7	7	7	7	7	7	7	7	7	7	7		
8	8	8	8	8	8	8	8	8	8	8	8	8	8		
9	9	9	9	9	9	9	9	9	9	9	9	9	9		
10	10	10	10	10	10	10	10	10	10	10	10	10	10		
11	11	11	11	11	11	11	11	11	11	11	11	11	11		
12	12	12	12	12	12	12	12	12	12	12	12	12	12		
13	13	13	13	13	13	13	13	13	13	13	13	13	13		
14	14	14	14	14	14	14	14	14	14	14	14	14	14		
15	15	15	15	15	15	15	15	15	15	15	15	15	15		
16	16	16	16	16	16	16	16	16	16	16	16	16	16		
17	17	17	17	17	17	17	17	17	17	17	17	17	17		
18	18	18	18	18	18	18	18	18	18	18	18	18	18		
19	19	19	19	19	19	19	19	19	19	19	19	19	19		
20	20	20	20	20	20	20	20	20	20	20	20	20	20		
21	21	21	21	21	21	21	21	21	21	21	21	21	21		
22	22	22	22	22	22	22	22	22	22	22	22	22	22		
23	23	23	23	23	23	23	23	23	23	23	23	23	23		
24	24	24	24	24	24	24	24	24	24	24	24	24	24		
25	25	25	25	25	25	25	25	25	25	25	25	25	25		
26	26	26	26	26	26	26	26	26	26	26	26	26	26		
27	27	27	27	27	27	27	27	27	27	27	27	27	27		
28	28	28	28	28	28	28	28	28	28	28	28	28	28		
29	29	29	29	29	29	29	29	29	29	29	29	29	29		
30	30	30	30	30	30	30	30	30	30	30	30	30	30		
31	31	31	31	31	31	31	31	31	31	31	31	31	31		
32	32	32	32	32	32	32	32	32	32	32	32	32	32		
33	33	33	33	33	33	33	33	33	33	33	33	33	33		
34	34	34	34	34	34	34	34	34	34	34	34	34	34		
35	35	35	35	35	35	35	35	35	35	35	35	35	35		
36	36	36	36	36	36	36	36	36	36	36	36	36	36		
37	37	37	37	37	37	37	37	37	37	37	37	37	37		
38	38	38	38	38	38	38	38	38	38	38	38	38	38		
39	39	39	39	39	39	39	39	39	39	39	39	39	39		
40	40	40	40	40	40	40	40	40	40	40	40	40	40		
41	41	41	41	41	41	41	41	41	41	41	41	41	41		
42	42	42	42	42	42	42	42	42	42	42	42	42	42		
43	43	43	43	43	43	43	43	43	43	43	43	43	43		
44	44	44	44	44	44	44	44	44	44	44	44	44	44		
45	45	45	45	45	45	45	45	45	45	45	45	45	45		
46	46	46	46	46	46	46	46	46	46	46	46	46	46		
47	47	47	47	47	47	47	47	47	47	47	47	47	47		
48	48	48	48	48	48	48	48	48	48	48	48	48	48		
49	49	49	49	49	49	49	49	49	49	49	49	49	49		
50	50	50	50	50	50	50	50	50	50	50	50	50	50		
51	51	51	51	51	51	51	51	51	51	51	51	51	51		
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67	67	67	67	67	67	67	67	67	67	67	67	67	67		
68	68	68	68	68	68	68	68	68	68	68	68	68	68		
69	69	69	69	69	69	69	69	69	69	69	69	69	69		
70	70	70	70	70	70	70	70	70	70	70	70	70	70		
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72	72	72	72	72	72	72	72	72	72	72	72	72	72		
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75	75	75	75	75	75	75	75	75	75	75	75	75	75		
76	76	76	76	76	76	76	76	76	76	76	76	76	76		
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88	88	88	88	88	88	88	88	88	88	88	88	88	88		
89	89	89	89	89	89	89	89	89	89	89	89	89	89		
90	90	90	90	90	90	90	90	90	90	90	90	90	90		
91	91	91	91	91	91	91	91	91	91	91	91	91	91		
92	92	92	92	92	92	92	92	92	92	92	92	92	92		
93	93	93	93	93	93	93	93	93	93	93	93	93	93		
94	94	94	94	94	94	94	94	94	94	94	94	94	94		
95	95	95	95	95	95	95	95	95	95	95	95	95	95		
96	96	96	96	96	96	96	96	96	96	96	96	96	96		
97	97	97	97	97	97	97	97	97	97	97	97	97	97		
98	98	98	98	98	98	98	98	98	98	98	98	98	98		
99	99	99	99	99	99	99	99	99	99	99	99	99	99		
100	100	100	100	100	100	100	100	100	100	100	100	100	100		

Appendix.—Principle Forms Used in Evaluating Housing Unit Coverage in the 20th Decennial Census

O. M. B. No. 0607-0364; Approval Expires June 30, 1982

FORM D-8098  
(6-2-81)

U. S. DEPARTMENT OF COMMERCE  
BUREAU OF THE CENSUS

P-SAMPLE FOLLOWUP  
HOUSING UNIT COVERAGE STUDIES  
20th Decennial Census - 1980

NOTICE — Your report to the Census Bureau is confidential by law (title 13, U.S. Code). It may be seen only by sworn Census employees and may be used only for statistical purposes.

► Section I — CONTROL

PSU	Segment	D.O.	ED
City		State	
Interviewer name		Code	

RECORD OF RESPONDENTS

Sheet/ Line number	Interview status (I or NI)	Respondent name/title (Occupant, neighbor, apartment manager, etc.)	Telephone number
			<input type="checkbox"/> None

If a unit is a non-interview, enter reason in the "Remarks" below.

Remarks

► Section II — FOLLOWUP INTERVIEW

INTRODUCTION

I am (your name) from the U.S. Bureau of the Census. Here is my identification. As part of the evaluation of the 1980 Census, we are now visiting a sample of addresses to find out how well the census counted the housing units.

Ask at each unit on the Listing Sheets for which household name is not given.

1. What is the last name of the household that lived at this housing unit on April 1, 1980?

Record the last name (or "Occ." or "Vac." if name is not known) in the "Remarks" column of the appropriate line of the Listing Sheet.

Ask at each basic address on the Listing Sheets which has at least one unit with a circled line number.

2. Is there a street address or mailing address other than (basic address given on the Listing Sheet) that identifies this structure or any of the units in the structure?

Record any alternate address(es) on the appropriate line in columns (2) and (3) if Listing Sheet is 11-211A or 11-211B, or in column (4) if Listing Sheet is 11-212.

► Section III — SPECIAL SITUATIONS/COMMENTS


#### Appendix.—Principle Forms Used in Evaluating Housing Unit Coverage in the 20th Decennial Census

**Appendix.—Principle Forms Used in Evaluating Housing Unit Coverage in the 20th Decennial Census**

#### Appendix.—Principle Forms Used in Evaluating Housing Unit Coverage in the 20th Decennial Census

Sheet \_\_\_\_ of \_\_\_\_ sheets

Appendix.—Principle Forms Used in Evaluating Housing Unit Coverage in the 20th Decennial Census

FORM 11-211A (5-10-70)		U.S. DEPARTMENT OF COMMERCE SOCIAL AND ECONOMIC STATISTICS ADMIN., BUREAU OF THE CENSUS		PSU code	Segment		Survey		
					Number	Type			
ADDRESS LISTING SHEET				Tract	1970 ED		Address type		
Line No. (1)	Block	Basic address		House No. (3)	Unit address (Location of unit or apartment No.) (4)	Sample designa- tion (5)	Serial No. (6)	Number of Census units (7)	Remarks
		Street name or road designation (2)							
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
ADDRESS COVERAGE CHECK									
Name or initials	Listed		Updated		Footnotes				
Month									
Year									

Appendix.—Principle Forms Used in Evaluating Housing Unit Coverage in the 20th Decennial Census

FORM 11-2118 (1-25-76)		U.S. DEPARTMENT OF COMMERCE BUREAU OF THE CENSUS		PSU code	Segment		Survey		
ADDRESS LISTING SHEET				Number	Type				
		Tract		1970 ED		Address type			
SPECIAL PLACE INFORMATION									
Name, address, ZIP code, and type of special place					<input type="checkbox"/> STAFF		<input type="checkbox"/> UNCLASSIFIED		
					Person to contact				
					Name				
					Title				
Telephone (Area code, number, and extension)									
Line No. (1)	Block (2)	Basic Address		Unit address (Location of unit or apartment No.) (4)	Sample designation (5)	Serial No. (6)	Number of census units (7)	Permit No. Date issued (8)	Remarks
1		Street name or road designation (2)	House No. (3)						
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
ADDRESS COVERAGE CHECK							Footnotes		
Name or Initials	Listed		Updated						
Month									
Year									

Copy distribution: WHITE — Regional Office

YELLOW — Send to SMD, Jeffersonville, after listing

PINK — SMD Control SHEET \_\_\_\_\_ OF \_\_\_\_\_ SHEETS

\* U. S. GOVERNMENT PRINTING OFFICE: 1977—759 300

Appendix.—Principle Forms Used in Evaluating Housing Unit Coverage in the 20th Decennial Census

FORM 11-212 (7-22-78)		U.S. DEPARTMENT OF COMMERCE BUREAU OF THE CENSUS		PSU code	Segment number	Survey			Year built codes							
						<input type="checkbox"/> CPS	<input type="checkbox"/> AHS	<input type="checkbox"/> HIS		<input type="checkbox"/> NCS	<input type="checkbox"/> QHS	<input type="checkbox"/>				
		AREA SEGMENT LISTING SHEET		Post office (City, town, or village)												
SPECIAL PLACE INFORMATION																
Name, address, ZIP code, and type of special place										<input type="checkbox"/> STAFF	<input type="checkbox"/> UNCLASSIFIED					
										Person to contact						
										Name						
										Title						
Telephone (Area code, number, extension)																
Line No.	Street name or road designation	House number or side of road	Description or location of unit		Non-residential structures on same property	Sample designation	Serial number	Remarks and date of change		Year built (Circle code)						
(1)	(2)	(3)	(4)		(5)	(6)	(7)			(8)						
1	L or R				<input type="checkbox"/> Farm bldgs. <input type="checkbox"/> Store <input type="checkbox"/> Other					B A ND						
2	L or R				<input type="checkbox"/> Farm bldgs. <input type="checkbox"/> Store <input type="checkbox"/> Other					B A ND						
3	L or R				<input type="checkbox"/> Farm bldgs. <input type="checkbox"/> Store <input type="checkbox"/> Other					B A ND						
4	L or R				<input type="checkbox"/> Farm bldgs. <input type="checkbox"/> Store <input type="checkbox"/> Other					B A ND						
5	L or R				<input type="checkbox"/> Farm bldgs. <input type="checkbox"/> Store <input type="checkbox"/> Other					B A ND						
6	L or R				<input type="checkbox"/> Farm bldgs. <input type="checkbox"/> Store <input type="checkbox"/> Other					B A ND						
7	L or R				<input type="checkbox"/> Farm bldgs. <input type="checkbox"/> Store <input type="checkbox"/> Other					B A ND						
8	L or R				<input type="checkbox"/> Farm bldgs. <input type="checkbox"/> Store <input type="checkbox"/> Other					B A ND						
9	L or R				<input type="checkbox"/> Farm bldgs. <input type="checkbox"/> Store <input type="checkbox"/> Other					B A ND						
10	L or R				<input type="checkbox"/> Farm bldgs. <input type="checkbox"/> Store <input type="checkbox"/> Other					B A ND						
Remarks																

Appendix.—Principle Forms Used in Evaluating Housing Unit Coverage in the 20th Decennial Census

Form 11-213 (5-15-75)			U.S. DEPARTMENT OF COMMERCE BUREAU OF THE CENSUS		PSU Code	Segment Number	1970 Tract	ED	Survey CPS HIS QHS	
<b>SPECIAL PLACE LISTING SHEET</b>										
<b>Section I — IDENTIFICATION</b>										
<p>Name of place</p> <p>Address (Number and street)</p> <p>City, State, and ZIP code</p>										
Type of place					Type code	c. Type of register in this place				
						d. Number of units in register				
						Staff	Unclassified	e. Listed or updated	Month and year	Inter. Initials
						1.				
						2.				
						3.				
						4.				
						5.				
						6.				
						7.				
						8.				
<p><b>Section II — SAMPLING INSTRUCTIONS (Office use only)</b></p> <p>SAMPLE →</p> <p>Start with</p> <p>Take every</p>										
<p>f. Name of person to contact</p> <p>Title</p> <p>Telephone (Area code, No., Ext.)</p>										
<b>Section IV — UNITS IN SPECIAL PLACE (For complete listing only)</b>										
Line No. (1)	Deletes (2)	Sample designa- tion (3)	Number or location of unit (4)	Line No. (1)	Deletes (2)	Sample designa- tion (3)	Number or location of unit (4)			
1				26						
2				27						
3				28						
4				29						
5				30						
6				31						
7				32						
8				33						
9				34						
10				35						
11				36						
12				37						
13				38						
14				39						
15				40						
16				41						
17				42						
18				43						
19				44						
20				45						
21				46						
22				47						
23				48						
24				49						
25				50						
Remarks										

Continue on reverse side

SHEET \_\_\_\_\_ OF \_\_\_\_\_ SHEETS

## Appendix.—Principle Forms Used in Evaluating Housing Unit Coverage in the 20th Decennial Census

<b>FORM D-8044</b> <small>15-19-801</small> <b>U.S. DEPARTMENT OF COMMERCE</b> <b>BUREAU OF THE CENSUS</b> <b>ENUMERATION SAMPLE</b> <b>POST ENUMERATION SURVEY</b> <b>20th Decennial Census - 1980</b>			<b>Form Approved: O.M.B. No. 41-S80027</b> <b>NOTICE</b> — Your report to the Census Bureau is confidential by law (title 13, U.S. Code). It may be seen only by sworn Census employees and may be used only for statistical purposes.																																														
► <b>Section I - IDENTIFICATION</b>																																																	
1. D.O.    2. PSU    3. Segment    4. Control No.    5. Ck. digit    6. Special place																																																	
<b>7. Street address and telephone number</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">a. House No.</td> <td style="width: 25%;">b. Street name</td> <td style="width: 25%;">c. Unit</td> <td style="width: 25%;">d. Location description</td> </tr> <tr> <td colspan="2">d. City</td> <td>e. State</td> <td>f. ZIP code</td> </tr> <tr> <td colspan="2">g. Telephone</td> <td>Area code</td> <td>Number</td> </tr> <tr> <td colspan="2"></td> <td colspan="2"></td> </tr> </table>						a. House No.	b. Street name	c. Unit	d. Location description	d. City		e. State	f. ZIP code	g. Telephone		Area code	Number																																
a. House No.	b. Street name	c. Unit	d. Location description																																														
d. City		e. State	f. ZIP code																																														
g. Telephone		Area code	Number																																														
<b>8. Census household status</b> <table style="margin-left: 20px; border-collapse: collapse;"> <tr> <td><input type="checkbox"/> Occupied —</td> <td><input type="checkbox"/> Vacant</td> </tr> <tr> <td colspan="2"><i>Begin Interview in Section II</i></td> </tr> <tr> <td><input type="checkbox"/> Unknown</td> <td><input type="checkbox"/> Closeout</td> </tr> <tr> <td><input type="checkbox"/> Closeout</td> <td><input type="checkbox"/> No census questionnaire</td> </tr> </table> <span style="margin-left: 20px;">} SKIP to Section VI</span>						<input type="checkbox"/> Occupied —	<input type="checkbox"/> Vacant	<i>Begin Interview in Section II</i>		<input type="checkbox"/> Unknown	<input type="checkbox"/> Closeout	<input type="checkbox"/> Closeout	<input type="checkbox"/> No census questionnaire																																				
<input type="checkbox"/> Occupied —	<input type="checkbox"/> Vacant																																																
<i>Begin Interview in Section II</i>																																																	
<input type="checkbox"/> Unknown	<input type="checkbox"/> Closeout																																																
<input type="checkbox"/> Closeout	<input type="checkbox"/> No census questionnaire																																																
<b>9. Special place designation</b> <table style="margin-left: 20px; border-collapse: collapse;"> <tr> <td><input type="checkbox"/> Institutional (IN)</td> </tr> <tr> <td><input type="checkbox"/> Noninstitutional (NON)</td> </tr> </table>						<input type="checkbox"/> Institutional (IN)	<input type="checkbox"/> Noninstitutional (NON)																																										
<input type="checkbox"/> Institutional (IN)																																																	
<input type="checkbox"/> Noninstitutional (NON)																																																	
<b>INTRODUCTION</b> ► Hello, I am (your name) from the U.S. Bureau of the Census. Here is my identification card. We are taking a Survey to determine the completeness of the census conducted last April. I have some questions to ask you. Did you receive our letter? <input type="checkbox"/> Yes — Continue interview <input type="checkbox"/> No — Give the respondent a copy of the letter. <i>Continue interview.</i>																																																	
<b>► Section II - INTERVIEW RECORD</b>																																																	
<b>1. Interviewer name</b> _____   Code _____  <b>2. Status of unit at sample address at the time of interview</b> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 75%;"><input type="checkbox"/> Unit not found — <i>Explain in item 3!</i></td> <td style="width: 25%;"><input type="checkbox"/> Other — <i>Specify</i> _____</td> </tr> <tr> <td><input type="checkbox"/> Unit no longer exists — <i>Explain in item 3!</i></td> <td></td> </tr> <tr> <td><input type="checkbox"/> Unit now vacant — <i>SKIP to Section IV</i></td> <td></td> </tr> <tr> <td colspan="2" style="text-align: center;"><i>Mark (X) source of information and enter name of that source below.</i></td> </tr> <tr> <td><input type="checkbox"/> Neighbor</td> <td><input type="checkbox"/> Resident manager</td> </tr> </table>						<input type="checkbox"/> Unit not found — <i>Explain in item 3!</i>	<input type="checkbox"/> Other — <i>Specify</i> _____	<input type="checkbox"/> Unit no longer exists — <i>Explain in item 3!</i>		<input type="checkbox"/> Unit now vacant — <i>SKIP to Section IV</i>		<i>Mark (X) source of information and enter name of that source below.</i>		<input type="checkbox"/> Neighbor	<input type="checkbox"/> Resident manager																																		
<input type="checkbox"/> Unit not found — <i>Explain in item 3!</i>	<input type="checkbox"/> Other — <i>Specify</i> _____																																																
<input type="checkbox"/> Unit no longer exists — <i>Explain in item 3!</i>																																																	
<input type="checkbox"/> Unit now vacant — <i>SKIP to Section IV</i>																																																	
<i>Mark (X) source of information and enter name of that source below.</i>																																																	
<input type="checkbox"/> Neighbor	<input type="checkbox"/> Resident manager																																																
<input type="checkbox"/> Unit now occupied — <i>Enter respondent's name and continue with Section III.</i> _____ <input type="checkbox"/> Refusal — <i>SKIP to Section VI</i>																																																	
<b>3. Record of interviewer contact at sample address when occupied</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2"></th> <th rowspan="2">Date (a)</th> <th rowspan="2">Time (b)</th> <th rowspan="2">Mark (X) if no answer (c)</th> <th rowspan="2">Is a callback needed? Mark (X) one (d)</th> <th colspan="2">Type of interview Mark (X) one (e)</th> <th rowspan="2">Comments (f)</th> </tr> <tr> <th>Yes</th> <th>No</th> <th>Personal</th> <th>Telephone</th> </tr> </thead> <tbody> <tr> <td>Initial</td> <td></td> <td>a.m. p.m.</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Callback 1</td> <td></td> <td>a.m. p.m.</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Callback 2</td> <td></td> <td>a.m. p.m.</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Callback 3</td> <td></td> <td>a.m. p.m.</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>							Date (a)	Time (b)	Mark (X) if no answer (c)	Is a callback needed? Mark (X) one (d)	Type of interview Mark (X) one (e)		Comments (f)	Yes	No	Personal	Telephone	Initial		a.m. p.m.						Callback 1		a.m. p.m.						Callback 2		a.m. p.m.						Callback 3		a.m. p.m.					
	Date (a)	Time (b)	Mark (X) if no answer (c)	Is a callback needed? Mark (X) one (d)	Type of interview Mark (X) one (e)						Comments (f)																																						
					Yes	No	Personal	Telephone																																									
Initial		a.m. p.m.																																															
Callback 1		a.m. p.m.																																															
Callback 2		a.m. p.m.																																															
Callback 3		a.m. p.m.																																															

Appendix.—Principle Forms Used in Evaluating Housing Unit Coverage in the 20th Decennial Census

Section III – INTERVIEW AT SAMPLE ADDRESS										Complete items <i>i</i> through <i>o</i> as instructed for each member of the household. Then complete item <i>p</i> for each member of the household before completing item <i>q</i> . Verify the telephone number in Check item <i>B</i> .												
Line No.	a. Name	c. Relationship		d. Sex	e. Race	f. Age	g. Marital status	h. Origin	i. Did you ... ever live or stay at this address?		j. When did ... ever live or stay at this address?		k. When did ... ever live or stay at this address?		l. Check item A							
		1	2						1	2	1	2	1	2	1	2	1	2	1	2	Mo. Yr. Mo. Yr.	
1		1							<input type="checkbox"/> Yes – Continue with <i>j</i> <input type="checkbox"/> No – SKIP to next line	<input type="checkbox"/> Yes – Continue with <i>j</i> <input type="checkbox"/> No – SKIP to <i>m</i>	<input type="checkbox"/> Yes – Continue with <i>j</i> <input type="checkbox"/> No – SKIP to <i>m</i>	<input type="checkbox"/> Yes – Continue with <i>j</i> <input type="checkbox"/> No – SKIP to <i>m</i>	<input type="checkbox"/> Yes – Continue with <i>j</i> <input type="checkbox"/> No – SKIP to <i>m</i>	<input type="checkbox"/> Yes – Continue with <i>j</i> <input type="checkbox"/> No – SKIP to <i>m</i>	<input type="checkbox"/> Yes – Continue with <i>j</i> <input type="checkbox"/> No – SKIP to <i>m</i>	<input type="checkbox"/> Yes – Continue with <i>j</i> <input type="checkbox"/> No – SKIP to <i>m</i>	1 <input type="checkbox"/> Yes – Continue with <i>i</i> 2 <input type="checkbox"/> No – SKIP to <i>m</i>	1 <input type="checkbox"/> Yes – Continue with <i>i</i> 2 <input type="checkbox"/> No – SKIP to <i>m</i>	1 <input type="checkbox"/> Yes – Continue with <i>i</i> 2 <input type="checkbox"/> No – SKIP to <i>m</i>	1 <input type="checkbox"/> Yes – Continue with <i>i</i> 2 <input type="checkbox"/> No – SKIP to <i>m</i>	1 <input type="checkbox"/> Yes – Continue with <i>i</i> 2 <input type="checkbox"/> No – SKIP to <i>m</i>	1 <input type="checkbox"/> Yes – Continue with <i>i</i> 2 <input type="checkbox"/> No – SKIP to <i>m</i>
2																	1 <input type="checkbox"/> Yes – Continue with <i>i</i> 2 <input type="checkbox"/> No – SKIP to <i>m</i>	1 <input type="checkbox"/> Yes – Continue with <i>i</i> 2 <input type="checkbox"/> No – SKIP to <i>m</i>	1 <input type="checkbox"/> Yes – Continue with <i>i</i> 2 <input type="checkbox"/> No – SKIP to <i>m</i>	1 <input type="checkbox"/> Yes – Continue with <i>i</i> 2 <input type="checkbox"/> No – SKIP to <i>m</i>	1 <input type="checkbox"/> Yes – Continue with <i>i</i> 2 <input type="checkbox"/> No – SKIP to <i>m</i>	1 <input type="checkbox"/> Yes – Continue with <i>i</i> 2 <input type="checkbox"/> No – SKIP to <i>m</i>
3																	1 <input type="checkbox"/> Yes – Continue with <i>i</i> 2 <input type="checkbox"/> No – SKIP to <i>m</i>	1 <input type="checkbox"/> Yes – Continue with <i>i</i> 2 <input type="checkbox"/> No – SKIP to <i>m</i>	1 <input type="checkbox"/> Yes – Continue with <i>i</i> 2 <input type="checkbox"/> No – SKIP to <i>m</i>	1 <input type="checkbox"/> Yes – Continue with <i>i</i> 2 <input type="checkbox"/> No – SKIP to <i>m</i>	1 <input type="checkbox"/> Yes – Continue with <i>i</i> 2 <input type="checkbox"/> No – SKIP to <i>m</i>	1 <input type="checkbox"/> Yes – Continue with <i>i</i> 2 <input type="checkbox"/> No – SKIP to <i>m</i>
4																	1 <input type="checkbox"/> Yes – Continue with <i>i</i> 2 <input type="checkbox"/> No – SKIP to <i>m</i>	1 <input type="checkbox"/> Yes – Continue with <i>i</i> 2 <input type="checkbox"/> No – SKIP to <i>m</i>	1 <input type="checkbox"/> Yes – Continue with <i>i</i> 2 <input type="checkbox"/> No – SKIP to <i>m</i>	1 <input type="checkbox"/> Yes – Continue with <i>i</i> 2 <input type="checkbox"/> No – SKIP to <i>m</i>	1 <input type="checkbox"/> Yes – Continue with <i>i</i> 2 <input type="checkbox"/> No – SKIP to <i>m</i>	1 <input type="checkbox"/> Yes – Continue with <i>i</i> 2 <input type="checkbox"/> No – SKIP to <i>m</i>
5																	1 <input type="checkbox"/> Yes – Continue with <i>i</i> 2 <input type="checkbox"/> No – SKIP to <i>m</i>	1 <input type="checkbox"/> Yes – Continue with <i>i</i> 2 <input type="checkbox"/> No – SKIP to <i>m</i>	1 <input type="checkbox"/> Yes – Continue with <i>i</i> 2 <input type="checkbox"/> No – SKIP to <i>m</i>	1 <input type="checkbox"/> Yes – Continue with <i>i</i> 2 <input type="checkbox"/> No – SKIP to <i>m</i>	1 <input type="checkbox"/> Yes – Continue with <i>i</i> 2 <input type="checkbox"/> No – SKIP to <i>m</i>	1 <input type="checkbox"/> Yes – Continue with <i>i</i> 2 <input type="checkbox"/> No – SKIP to <i>m</i>
6																	1 <input type="checkbox"/> Yes – Continue with <i>i</i> 2 <input type="checkbox"/> No – SKIP to <i>m</i>	1 <input type="checkbox"/> Yes – Continue with <i>i</i> 2 <input type="checkbox"/> No – SKIP to <i>m</i>	1 <input type="checkbox"/> Yes – Continue with <i>i</i> 2 <input type="checkbox"/> No – SKIP to <i>m</i>	1 <input type="checkbox"/> Yes – Continue with <i>i</i> 2 <input type="checkbox"/> No – SKIP to <i>m</i>	1 <input type="checkbox"/> Yes – Continue with <i>i</i> 2 <input type="checkbox"/> No – SKIP to <i>m</i>	1 <input type="checkbox"/> Yes – Continue with <i>i</i> 2 <input type="checkbox"/> No – SKIP to <i>m</i>
7																	1 <input type="checkbox"/> Yes – Continue with <i>i</i> 2 <input type="checkbox"/> No – SKIP to <i>m</i>	1 <input type="checkbox"/> Yes – Continue with <i>i</i> 2 <input type="checkbox"/> No – SKIP to <i>m</i>	1 <input type="checkbox"/> Yes – Continue with <i>i</i> 2 <input type="checkbox"/> No – SKIP to <i>m</i>	1 <input type="checkbox"/> Yes – Continue with <i>i</i> 2 <input type="checkbox"/> No – SKIP to <i>m</i>	1 <input type="checkbox"/> Yes – Continue with <i>i</i> 2 <input type="checkbox"/> No – SKIP to <i>m</i>	1 <input type="checkbox"/> Yes – Continue with <i>i</i> 2 <input type="checkbox"/> No – SKIP to <i>m</i>

► Section IV – This section is to be completed for each person in Section III that has "No" checked in item *c* or when the unit is currently vacant.

Interviewer: Attempt to locate a knowledgeable respondent from the list below who knows at least one member of the household.

- Neighbor
- Apartment manager
- Real estate agent

If another address is located from another source, specify that source and address.

- Telephone directory
- City or suburban directory
- Utility company
- Other – specify \_\_\_\_\_

Address \_\_\_\_\_

Line No.	a. Do you know ...?	b. Did ... ever live or stay at (read the address in Section III)	c. When did ... ever live or stay at that address?	d. When did ... ever live or stay at this address?		e. Check item C		f. Do you know where ... was living on April 1, 1980?		g. What was ...'s address on April 1, 1980?		OFFICE USE ONLY	OFFICE USE ONLY	
				FROM	TO	Mo.	Yr.	Mo.	Yr.	Mo.	Yr.			
1														
2														
3														
4														
5														
6														
7														

FORM D-1044 (5-19-80)

#### Appendix.—Principle Forms Used in Evaluating Housing Unit Coverage in the 20th Decennial Census

I. Are there any other addresses where . . . might have been reported in the census?		m. Do you know where . . . was living on about April 1, 1980?		n. Census Day residence is - (Apply residency rules for the alternate addresses. Mark the box indicating Census Day residence, and specify reason for this determination.)		o. What was . . . 's address on April 1, 1980?		OFFICE USE ONLY			OFFICE USE ONLY			p. What is . . . 's Social Security number?		
								a	b	c						
<input type="checkbox"/> Yes - SKIP to n		<input type="checkbox"/> Yes - SKIP to o		<input type="checkbox"/> Sample address - SKIP to next line		Reason for determination										
<input type="checkbox"/> No - SKIP to next line		<input type="checkbox"/> No - SKIP to next line		<input type="checkbox"/> Alternate address - Record address in o				SKIP to next line		<input type="checkbox"/> This ED	<input type="checkbox"/> Another ED					
<input type="checkbox"/> Yes - SKIP to n		<input type="checkbox"/> Yes - SKIP to o		<input type="checkbox"/> Sample address - SKIP to next line		Reason for determination		SKIP to next line		<input type="checkbox"/> This ED	<input type="checkbox"/> Another ED					
<input type="checkbox"/> No - SKIP to next line		<input type="checkbox"/> No - SKIP to next line		<input type="checkbox"/> Alternate address - Record address in o				SKIP to next line		<input type="checkbox"/> This ED	<input type="checkbox"/> Another ED					
<input type="checkbox"/> Yes - SKIP to n		<input type="checkbox"/> Yes - SKIP to o		<input type="checkbox"/> Sample address - SKIP to next line		Reason for determination		SKIP to next line		<input type="checkbox"/> This ED	<input type="checkbox"/> Another ED					
<input type="checkbox"/> No - SKIP to next line		<input type="checkbox"/> No - SKIP to next line		<input type="checkbox"/> Alternate address - Record address in o				SKIP to next line		<input type="checkbox"/> This ED	<input type="checkbox"/> Another ED					
<input type="checkbox"/> Yes - SKIP to n		<input type="checkbox"/> Yes - SKIP to o		<input type="checkbox"/> Sample address - SKIP to next line		Reason for determination		SKIP to next line		<input type="checkbox"/> This ED	<input type="checkbox"/> Another ED					
<input type="checkbox"/> No - SKIP to next line		<input type="checkbox"/> No - SKIP to next line		<input type="checkbox"/> Alternate address - Record address in o				SKIP to next line		<input type="checkbox"/> This ED	<input type="checkbox"/> Another ED					
<input type="checkbox"/> Yes - SKIP to n		<input type="checkbox"/> Yes - SKIP to o		<input type="checkbox"/> Sample address - SKIP to next line		Reason for determination		SKIP to next line		<input type="checkbox"/> This ED	<input type="checkbox"/> Another ED					
<input type="checkbox"/> No - SKIP to next line		<input type="checkbox"/> No - SKIP to next line		<input type="checkbox"/> Alternate address - Record address in o				SKIP to next line		<input type="checkbox"/> This ED	<input type="checkbox"/> Another ED					
<input type="checkbox"/> Yes - SKIP to n		<input type="checkbox"/> Yes - SKIP to o		<input type="checkbox"/> Sample address - SKIP to next line		Reason for determination		SKIP to next line		<input type="checkbox"/> This ED	<input type="checkbox"/> Another ED					
<input type="checkbox"/> No - SKIP to next line		<input type="checkbox"/> No - SKIP to next line		<input type="checkbox"/> Alternate address - Record address in o				SKIP to next line		<input type="checkbox"/> This ED	<input type="checkbox"/> Another ED					
<input type="checkbox"/> Yes - SKIP to n		<input type="checkbox"/> Yes - SKIP to o		<input type="checkbox"/> Sample address - SKIP to next line		Reason for determination		SKIP to next line		<input type="checkbox"/> This ED	<input type="checkbox"/> Another ED					
<input type="checkbox"/> No - SKIP to next line		<input type="checkbox"/> No - SKIP to next line		<input type="checkbox"/> Alternate address - Record address in o				SKIP to next line		<input type="checkbox"/> This ED	<input type="checkbox"/> Another ED					

**Section V** – This section is to be completed at the Post Office when no one reports knowledge about a person in Section III or Section IV.

Line No.	a. Do you have a change of address for ... at (read the address in Section 1)?	Contact postal carrier who services the address and task:	c. Have you ever delivered mail to who reportedly lived at (read the address in Section 1)?	d. What is ...'s forwarding address?	e. When did ... move from (read the address in Section 1)?		OFFICE USE ONLY
					Month	Year	
1	<input type="checkbox"/> Yes – SKIP to d <input type="checkbox"/> No – Continue with c	<input type="checkbox"/> Yes – SKIP to e <input type="checkbox"/> No – SKIP to next line					
2	<input type="checkbox"/> Yes – SKIP to d <input type="checkbox"/> No – Continue with c	<input type="checkbox"/> Yes – SKIP to e <input type="checkbox"/> No – SKIP to next line					
3	<input type="checkbox"/> Yes – SKIP to d <input type="checkbox"/> No – Continue with c	<input type="checkbox"/> Yes – SKIP to e <input type="checkbox"/> No – SKIP to next line					
4	<input type="checkbox"/> Yes – SKIP to d <input type="checkbox"/> No – Continue with c	<input type="checkbox"/> Yes – SKIP to e <input type="checkbox"/> No – SKIP to next line					
5	<input type="checkbox"/> Yes – SKIP to d <input type="checkbox"/> No – Continue with c	<input type="checkbox"/> Yes – SKIP to e <input type="checkbox"/> No – SKIP to next line					
6	<input type="checkbox"/> Yes – SKIP to d <input type="checkbox"/> No – Continue with c	<input type="checkbox"/> Yes – SKIP to e <input type="checkbox"/> No – SKIP to next line					
7	<input type="checkbox"/> Yes – SKIP to d <input type="checkbox"/> No – Continue with c	<input type="checkbox"/> Yes – SKIP to e <input type="checkbox"/> No – SKIP to next line					

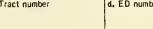
Appendix.—Principle Forms Used in Evaluating Housing Unit Coverage in the 20th Decennial Census

Line No.	Ask this question of all unrelated individuals in the household and/or one member of a family: q. We may be contacting you again in the future. In case . . . moves we would like to contact . . . at his/her new address. What are the names, addresses, and telephone numbers of two persons, such as close relatives or friends, who would know where . . . is living?							
	Name		Relationship		Name		Relationship	
1	Address				Address			
	Telephone →	Area code	Number	Telephone →	Area code	Number		
2	Name		Relationship		Name		Relationship	
	Address				Address			
3	Telephone →	Area code	Number	Telephone →	Area code	Number		
	Name		Relationship		Name		Relationship	
4	Address				Address			
	Telephone →	Area code	Number	Telephone →	Area code	Number		
5	Name		Relationship		Name		Relationship	
	Address				Address			
6	Telephone →	Area code	Number	Telephone →	Area code	Number		
	Name		Relationship		Name		Relationship	
7	Address				Address			
	Telephone →	Area code	Number	Telephone →	Area code	Number		
CHECK ITEM B		Is a telephone number supplied in Section I, Item g?						
<input type="checkbox"/> Yes — Verify number and correct if necessary. <input type="checkbox"/> No — Obtain number and record in Section I, Item g.								

FORM C-60244 (5-19-80)

Page 3

## Appendix.—Principle Forms Used in Evaluating Housing Unit Coverage in the 20th Decennial Census

Section VI – FIELD GEOCODING					
1. Neighboring addresses					
Line No.	a. House number, street name, unit	b. Post office	c. ZIP code	d. Household name	
1					
2					
3					
4					
2. Geographic location information (Enumerator use only)					
a. The street on which I am traveling is –		b. The unit is on my – <input type="checkbox"/> Right <input type="checkbox"/> Left			
c. The last intersecting street or landmark I passed was –		d. The next intersecting street or landmark is –			
e. ENUMERATOR – Spot unit on map.					
3. Remarks					
<hr/> <hr/>					
4. Field geocoding (Office use only)					
a. D.O. number		c. Tract number	d. ED number	e. Block number	
5. Census geocoding (Office use only) – Transcribe from master control list					
a. D.O. number	b. Control number	c. Tract number	d. ED number	e. Block number	
Section VII – RECONCILIATION					
1. Reconciliation requirements					
<input type="checkbox"/> Exact match – No reconciliation required	<input type="checkbox"/> Tract, ED, or block differs – Reconciliation required	<input type="checkbox"/> Insufficient information – No reconciliation required			
2. Results of reconciliation					
<input type="checkbox"/> Census geocoding in Section VI, item 5 is correct – STOP	<input type="checkbox"/> Field geocoding in Section VI, item 4 is correct – STOP	<input type="checkbox"/> Neither geocoding is correct – Enter spot on map and circle it			
3. Reconciliation geocoding					
		c. Tract number	d. ED number	e. Block number	
4. Reconciliation interviewer name _____ Code _____					
5. Remarks					
<hr/> <hr/>					
6. OFFICE USE ONLY					
a.	b.	c.	d.	e.	

Form D-6244 (5-19-80)

Appendix.—Principle Forms Used in Evaluating Housing Unit Coverage in the 20th Decennial Census

FORM D-8068 (09-21-80)		U. S. DEPARTMENT OF COMMERCE BUREAU OF THE CENSUS		NOTICE — Your answers are confidential. The law (title 13, United States code) requires that you answer the questions to the best of your knowledge.		
<b>E—SAMPLE</b> <b>SKETCH MAP</b> 20th Decennial Census — 1980				<b>Section I — CPS IDENTIFICATION</b>		
7. Address		8. Interviewer name		Code		
a. House No.	b. Street name	c. Unit				
d. City		e. State	f. ZIP code	9. Processing Office (Census) — Mark (X) one		
				<input type="checkbox"/> JPO	<input type="checkbox"/> LNPO	<input type="checkbox"/> NOPO
10. Sketch map						
<b>Section II — 1980 CENSUS GEOCODING INFORMATION</b>						
1. Remarks		2. D.O.	3. ED	4. Block	5. CSN	

Appendix.—Principle Forms Used in Evaluating Housing Unit Coverage in the 20th Decennial Census

FORM D-8340 (5-26-81)		U.S. DEPARTMENT OF COMMERCE BUREAU OF THE CENSUS	
<b>HOUSING UNIT COVERAGE STUDIES</b> <b>DUPLICATE SEARCH CONTROL WORKSHEET</b> 20th Decennial Census - 1980			
<b>C. IDENTIFICATION</b>			
NUMBER		Surname(s) (3)	Serial numbers of potential match questionnaires (4)
D.O. (1)	Control (2)		<input type="checkbox"/> None
			<input type="checkbox"/> None
<b>D. Work space</b>			

U.S. DEPARTMENT OF COMMERCE BUREAU OF THE CENSUS										A. LEVEL 1 ID										B. LEVEL 2 ID																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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E. E - SAMPLE QUESTIONNAIRE										F. QUESTIONNAIRE CONTAINING POSSIBLE DUPLICATE(S)										G. DEMOGRAPHIC MATCH CODES																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
Block number					Serial number					Block number					Serial number					Name (6)					Name (8)					Rel. (9)					Rel. (10)					Age (11)					Age (12)					D.O.B. (13)					D.O.B. (14)					Origin (15)					Origin (16)					Name (17)					Name (18)					Sex (19)					Sex (20)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
Line No.					Name (1)					Rel. (1)					Sex (3)					Race (4)					D.O.B. (5)					Origin (6)					Rel. (9)					Sex (10)					Age (11)					D.O.B. (12)					Origin (13)					Name (17)					Name (18)					Sex (19)					Sex (20)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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#### Appendix.—Principle Forms Used in Evaluating Housing Unit Coverage in the 20th Decennial Census

#### Appendix.—Principle Forms Used in Evaluating Housing Unit Coverage in the 20th Decennial Census

Sheet of Sheets

Household names found in ED. - Serial Number  
(Record serial number above. Record roster and characteristics in B.)

Household names not found in ED.

Appendix.—Principle Forms Used in Evaluating Housing Unit Coverage in the 20th Decennial Census

FORM D-8101 (Rev. 8-61)		U.S. DEPARTMENT OF COMMERCE BUREAU OF THE CENSUS			NOTICE — Your report to the Census Bureau is confidential by law (Title 13, U.S. Code). It may be seen only by sworn census employees and may be used only for statistical purposes.			O.M.B. No. 0607-0365: Approval Expires June 30, 1982	
<b>DUPLICATE CHECK</b> <b>HOUSING UNIT COVERAGE STUDIES</b> <b>20th Decennial Census — 1980</b>									Form _____ of _____ forms
<b>Section I — ADDRESS INFORMATION</b> <div style="display: flex; justify-content: space-between;"> <span><input type="checkbox"/> Additional forms D-8101 exist for this address</span> </div>									
1. Address	COLUMN A			COLUMN B					
2. D.O./ED/Serial Nos.	D.O.	ED	SN	D.O.	ED	SN			
3. Household names									
4. Location description									
<b>Section II — INTERVIEW CONTROL</b>									
1. Name of interviewer	Code	Section III — Remarks							
2. Status — Mark (X) one									
1 <input type="checkbox"/> Form completed									
2 <input type="checkbox"/> Form not completed — Give reason and notify supervisor									
<b>Section IV — FOLLOWUP INTERVIEW</b>									
<i>Locate the address in section I, column A</i>									
1. Does the address in column A completely describe the unit location, including street type and direction (if applicable)?		<input type="checkbox"/> Yes <input type="checkbox"/> No							
		3 <input type="checkbox"/> Street type incorrect or missing 4 <input type="checkbox"/> Direction incorrect or missing							
		Enter the corrections in section I, item 7, column A							
2. List in section V all units and household names as of April 1, 1980 in the same building or on the same property as the address in section I, column A.									
<b>Check Item A</b> Are the ED numbers in section I, item 2 identical?		1 <input type="checkbox"/> Yes — Continue with Check Item B 2 <input type="checkbox"/> No — Skip to Check Item C							
<b>Check Item B</b> Is the basic street address in column B identical to that in column A?		1 <input type="checkbox"/> Yes — Skip to Item 5 2 <input type="checkbox"/> No							

## Appendix.—Principle Forms Used in Evaluating Housing Unit Coverage in the 20th Decennial Census

► Section IV – FOLLOWUP INTERVIEW – Continued			
<p><i>Locate the address in section I, column B</i></p> <p><b>Check Item C</b> Is the address in column B in the same building or on the same property as the address in column A?</p> <p>3. Does the address in column B completely describe the unit location, including street type and direction (if applicable)?</p> <p>4. List in section V all units and household names as of April 1, 1980 in the same building or on the same property as the address in section I, column B.</p> <p>5. Locate one of the household members shown in section I, item 3. If you cannot reach any of them, contact another knowledgeable person (such as a neighbor or landlord).</p>			
<p>Name of respondent</p>		<p>Telephone number</p>	
<p><b>INTRODUCTION</b> Hello, I am [your name] from the U.S. Bureau of the Census. Here is my identification card. As part of the evaluation of the 1980 Census, a sample of questionnaires was checked to see if anyone was listed on more than one questionnaire. If anyone was listed more than once, we are now trying to determine whether the two questionnaires describe the same housing unit or two different housing units?</p>			
<p>6. Our comparison of census questionnaires indicated that at least one person listed on a questionnaire at [Read address from column A in section I] was also listed on another questionnaire at [Read address from column B in section I]. Do you have any idea why this may have happened?</p>		<p>1 <input type="checkbox"/> Yes } Explain below, then end interview with the respondent ↵      2 <input type="checkbox"/> No }</p> <p>_____</p> <p>_____</p>	
<p><b>Check Item D</b> Based on the fact that one or more persons listed in section I was enumerated on two different census questionnaires, and given the information you obtained while completing this form, do you believe that the same housing unit was enumerated twice during the census?</p>		<p>1 <input type="checkbox"/> Yes – Person(s) counted at the same unit twice      2 <input type="checkbox"/> No – Person(s) counted at two different units      3 <input type="checkbox"/> Don't know } Explain below ↵      _____</p> <p>_____</p>	
► Section V – UNIT DESIGNATIONS OR DESCRIPTIONS			
COLUMN A		COLUMN B	
Address		Address	
Apartment designation	Census Day household name	Apartment designation	Census Day household name
□ Column A listings continued on additional forms		□ Column B listings continued on additional forms	

FORM 0-1101-18-511



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